The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XV. No. 390 · DECEMBER 18, 1926 · Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices: Bouverie House, 154, Fleet Street, London, E.C.4.

Telegrams: "Allangas, Fleet, London." Telephone: City 0244

CHRISTMAS HOLIDAYS

The offices of THE CHEMICAL AGE *will be closed for the Christmas Holidays from 4 p.m. on Friday, December 24, to 9 a.m. on Tuesday, December 28.*

The journal will go to press next week a day earlier than usual and the last day for receipt of copy will be Wednesday instead of Thursday.

Imperial Chemical Industries

SHAREHOLDERS in the four constituent companies who are combining to form Imperial Chemical Industries, Ltd.—namely, Brunner, Mond and Co., Nobel Industries, United Alkali Co., and British Dyestuffs Corporation—received on Thursday morning the promised circular inviting and in each case unanimously recommending them to exchange their shares for shares in the new combine. The terms of exchange have already been published, and it may safely be assumed that shareholders will readily recognise the advantages offered. One of these advantages, as the circular points out, is that there must inevitably be a much wider market for the shares in Imperial Chemical Industries than exists at present for the shares of the participating companies. On the other hand, the market for unexchanged shares must tend to become restricted, and this feature is one of importance, especially to trustees in the event of their having to realise at short notice. The fusion will become operative from January 1, 1927, and the directors reserve the right to close the present offer of exchange after January 15 next. Upon receipt of share certificates and transfer deeds, allotment letters will be issued, together with cash payment in respect of any fractions, and share certificates will follow in due course, though a period of four months is reserved for the latter transaction. Application will be made to the Stock Exchange at the earliest possible moment for quotations for I.C.I. shares.

In an accompanying statement issued by the chairmen of the four constituent companies the general considerations in favour of the fusion are broadly defined. It has become more and more evident that the economic movement towards groupings of great industrial, financial, and technical strength, both on the Continent of Europe and in the United States of America, is a development to which British enterprise cannot remain indifferent. In the chemical industry there have been brought into existence, both in Europe and America, large and powerful combinations commanding huge resources in equipment, technique, and finance. Powerful as each of the four British companies is, these circumstances call for even greater strength, which can only be attained by a union of interests such as will be achieved by the successful establishment of Imperial Chemical Industries, Ltd. This union will enable leaders of the chemical industry in Great Britain to speak with a united voice and present a united front, either at home or abroad, in negotiation with Governments or in competition or negotiation with individuals. United in this manner the companies will possess the force and power essential in the present world conditions.

As to the advantages to be derived from the co-operation of those engaged in the same line of work, it is pointed out that the economies to be achieved in administrative, commercial, and technical spheres are self-evident. Unnecessary duplication of capital expenditure can be avoided; research work, so vital to the chemical industry, can be concentrated; costs can be reduced by the interchange of technical knowledge on processes and patents. Where different companies produce the same articles, or require each other's products—as is the case with the four companies participating in this fusion—mutual assistance in production and mutual benefit in inter-company trade are bound to follow. Beyond all this, however, is the imperial aspect. The British Empire, it is pointed out, is the greatest single economic unit in the world, and one in which every patriotic member of the British Commonwealth has a personal interest. By linking the title of the new company to that unit, it is intended to emphasise the fact that the promotion of imperial trading interests will command the special consideration and thought of those who will be responsible for directing the new company. The participating companies already enjoy a world-wide trade; their

merchanting and manufacturing operations extend throughout the British Dominions overseas. It will be the avowed intention of the new company, without limiting its activities in foreign overseas markets, specially to extend the development and importance of the chemical industry throughout the Empire.

Yet another important point is that the union of the four participating companies will be a union, in the main, of long established and successful enterprises, and the directorate of the new company includes those who have a lifelong knowledge of the industries. There are in the new company no promoter's profits and no inflation of capital. Its policy will be to maintain and improve the existing enterprises by all means possible and to lose no opportunity of putting into practice new inventions and new processes. There never was a moment in the chemical industry when so many new problems awaited solution vital to the interests of Great Britain and the Empire, to their economic welfare, and to their national safety. Combining the command of adequate financial resources and wide commercial experience with scientific and technical abilities of the highest order, the new company will be in a position to grapple successfully with every such problem however large and difficult; and the results should be profitable to the shareholders as well as beneficial to the community.

These carefully drawn statements are supplemented by two personal assurances from Sir Alfred Mond, which will be generally welcome. The first is that the new company will be administered primarily in the interests of customers all over the world. That is the surest guarantee of trade, both present and prospective. The second is that the mere size of the organisation will not break the contact between those at the head of it and those who give their daily work to the enterprise in whatever sphere, and that the maintenance of wages and good conditions will continue to be a constant object of the directorate. That, again, is the wise and progressive policy. It has been sufficiently vindicated in the success with which the chemical industry generally has survived the coal strike and especially in the happy relations which have prevailed in the four constituent companies. It only remains to note the admirable organisation which has enabled so vast a concern as Imperial Chemical Industries to come so smoothly into existence, and to express the most confident belief in its future.

Sir William Tilden

By the death of Sir William Tilden, in his 85th year, British chemistry loses one of its most notable and distinguished figures. Although his memory went back far enough to link him personally with the great group of Mid-Victorian scientists, he was very far, even in his old age, from living merely in the past. He maintained to the end an alert interest in contemporary developments, and some of his best known books, such as his life of Ramsay, and his *Famous Chemists: the Men and Their Work*, were published only a few years ago. While his life was largely spent in academic work at Clifton, Birmingham, and the Royal College of Science, he was honourably known as a scientific investigator. He worked hard in research into the constitution of terpenes, and to him belongs the distinction of having demonstrated the theoretical possibility of synthetic rubber. His work on the specific heats of metals and the relation of specific heat to atomic weight was also notable. He had held the presidency of the Institute and of the Chemical Society, and had received many other marks of recognition from his profession. Essentially a scholar in instincts and tastes, he turned naturally to literary work, and will perhaps be best remembered by his books, especially those, like his *Chemical Discovery and Invention in the Twentieth Century*, that deal with chemical history. He will be missed especially by the few survivors of his own generation, and those less intimate will regret the loss of a gentleman of science—and with it, it may almost be said, the passing of a chemical type.

The Ideal Business Conference

At a time when the pooling of knowledge and experience and the culture of co-operative relations are regarded as essential features of large business management, it is permissible once again to draw attention to one of the best examples of the kind with which we are familiar. We refer to the annual sales conference organised by Naylor Bros. (London), Ltd., now included in the great Nobel organisation. The conference (that for 1926 closed at Windsor on Saturday) lasts a week, and part is taken in it by the heads of all departments. Organised on the basic principle that the customer is always right and that the satisfying of his needs is the firm's essential business, the first two days are given up to the reports of sales representatives. These invaluable gentlemen are the barometers of trade opinion. They are in constant touch with consumers, and if the goods are wrong in any way, the salesman is the first to feel the draught. Here, then, the salesmen meet once a year, and through them the producing and technical departments are brought face to face with the great buying community, and learn what they like or dislike, what they praise and what they blame, where the product succeeds or fails in meeting their needs and convenience. No doubt, many of the complaints made by customers have little foundation, but it is good to know what they are. If they are without justification, the grievance can easily be disposed of; if they have any substance, it is the business of the producing end to effect the necessary improvements. Nothing could be better calculated to link up every part of the machinery; those responsible for the directional centres are able at a glance to visualise the whole field of operations and adapt their plans accordingly.

Many of the problems thus raised demand consideration and inquiry before they can be answered, and Wednesday, devoted to practical demonstrations of new products and inspection of works, supplies the necessary interlude. This year it was occupied with demonstrations in the application by spraying of new nitrocellulose lacquers for motor-cars. This represents a development of which we are only yet at the beginning. New forms of these lacquers are sure to come later, but in this case, the wise policy is followed of seeing that products are commercially satisfactory before they are put on the market. The spraying

lacquers, we understand, are proving thoroughly satisfactory. Thursday and Friday complete the work begun on Monday and Tuesday. They are given up to replying to all the points raised by salesmen, and to outlining the policy for the coming year. By the end of the week every aspect of the business has thus been thoroughly reviewed, workers in every department have been brought into personal contact, the serious business has been pleasantly relieved by social functions, and everyone departs encouraged and braced for another year's work. Such a scheme seems to offer an excellent model for large businesses generally by providing intimate co-ordination between the sales, production, research, and management sides. It was satisfactory to hear during the conferences that, in spite of the most difficult year ever experienced, sales had been more than maintained, and that research work, which the firm have always recognised as an essential element, and the chemical control of raw materials will be further strengthened by association with Nobel Industries.

Pharmaceutical "Analysts"

SUGGESTIONS have recently been forthcoming of a new move on the part of the pharmacists. It has been pointed out that under present conditions medical men find it rather difficult to get certain tests carried out without recourse to special departments in hospitals. The exact nature of the tests is not specified, but presumably a large number of chemical ones would be included among them. While certain examinations of pathological specimens are obviously best dealt with by hospitals, a good deal of benefit would accrue both to the medical profession (who would gain assurance in diagnosis) and to the public (who would gain by rapidity of treatment) if some tests could be carried out more expeditiously than is at present possible. The suggestion that these tests could be carried out by pharmacists, which has been put forward quite seriously, does not reflect great credit on its authors. There are few pharmacists whose knowledge of science in general and of chemistry in particular is such as to inspire much confidence in examinations carried out by them. Especially as regards quantitative measurements, their results would undoubtedly be worthless. Moreover, in case of legal proceedings arising out of work carried out by them, can it be seriously believed that any weight would attach in a court of law to the testimony of pharmacists as regards scientific matters? At the best, pharmacists could only carry out scientific tests by blindly following book directions, without any clear idea of the underlying principles. This sort of thing is bad enough in any work; in work which lies at the basis of medical treatment it might easily lead to very serious results.

It is unlikely that this little scheme will come to fruition, but it behoves chemists to be on their guard and to see that the general public is made aware of the dangers to which it may be subjected if such a state of affairs is allowed to come to pass. In a sense, the fact that a need exists for more facilities for the testing of medical specimens is something of a reproach on chemists as a class. It seems necessary that some link should be established between the medical and chemical professions. Apart from certain specific classes of work, there are few examinations of medical specimens which chemists are not qualified to carry out with the maximum of speed and accuracy. Some of our younger members might with advantage specialise on this form of consulting practice. Year by year, with the growth of bio-chemistry and scientific medicine, the need for such a class of workers grows. The chemical profession would be wise to make an inquiry into this matter, with a view to organising this aspect of its activities, not only to its own benefit, but also to that of the medical practitioner and the public at large.

The "C.A." Year Book for 1927

READERS will be interested to hear that THE CHEMICAL AGE *Year Book, Diary, and Directory for* 1927 is just out of the press. The volume is substantially larger than its predecessors, and the large number of trade announcements indicate its increasing appreciation as a calendar and work of reference. The main features include a directory of the principal chemical and allied societies throughout the world, Government and official data of various kinds, a summary of the more important chemical events of the past year, tables indicating the commercial uses of industrial chemicals, trade names of dyestuff intermediates, chemical names and formulæ of common chemicals, a list of the names and publishers' addresses of the leading chemical and metallurgical journals throughout the world, numerous technical tables, index to commercial information, Stock Exchange prices, postal information, etc. The volume makes a handsome and useful calendar and handbook either for the desk or the book shelf, and this year it will reach a larger number of users than ever before. Annual postal subscribers to THE CHEMICAL AGE will receive a copy free by post in the ordinary way. Annual subscribers who obtain THE CHEMICAL AGE through local newsagents should apply to the agents for copies to which they are entitled. To non-subscribers or occasional subscribers the price of the diary is 10s. 6d. A small number of surplus copies are available, and an economical way of obtaining one is to become an annual subscriber to THE CHEMICAL AGE for 1927 (prepaid subscription 21s. per annum for the United Kingdom and 26s. abroad).

Books Received

WHITAKER'S ALMANACK, 1927. London: 12, Warwick Lane. Complete edition, pp. 900. 6s. Abridged edition, pp. 240. 1s. 6d.

THE MARKETING PROBLEM—HOW IT IS BEING TACKLED IN U.S.A. By Edward T. Elbourne. London: Longmans, Green and Co., Ltd. Pp. 216. 10s.

The Calendar

Dec.		
18	North of England Institute of Mining and Mechanical Engineers: "The Chemical Relations of the Principal Varieties of Coal." Professor G. Hickling. 2.30 p.m.	Newcastle-upon-Tyne.
20	Chemical Industry Club: "The Preparation of the Tungsten Filament." Dr. C. J. Smithells. 8 p.m.	2, Whitehall Court, London, S.W.1.

Chemical Trade Returns for November

Increased Imports: Reduced Exports

THE Board of Trade returns for November of overseas trade in chemicals, drugs, dyes, and colours show a reduction in both exports and re-exports and an increase in imports. Imports have increased to £1,589,738, as compared with £1,258,503 in the corresponding month of 1925. Exports, on the other hand, have declined by £142,506—from £1,777,322 in November of 1925 to £1,634,816 last month. Re-exports are down by £19,058—from £97,431 in November of 1925 to £78,373 last month. The detailed figures are given below :—

Imports

	Quantities. Month ended Nov. 30		Value. Month ended Nov. 30	
	1925.	1926.	1925.	1926.
			£	£
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic .....tons	662	1,220	29,439	53,473
Acid Tartaric ....cwts.	2,284	1,709	10,920	8,444
Bleaching Materials ,,	4,359	9,480	8,496	8,790
Borax..... ,,	8,381	700	9,928	813
Calcium Carbide... ,,	78,041	53,870	47,733	37,203
Coal Tar Products not elsewhere specified value	—	—	17,308	238,796
Glycerine Crude...cwts.	237	504	425	2,158
Distilled Glycerine ,,	204	60	754	300
Red Lead and Orange Lead .....cwts.	1,509	3,410	3,176	6,264
Nickel Oxide..... ,,	3,001	—	16,470	—
Potassium Nitrate . ,,	12,700	11,179	14,528	12,604
Other Potassium Compounds .....cwts.	241,806	382,234	63,914	100,056
Sodium Nitrate ... ,,	95,140	22,240	57,822	13,676
Other Sodium Compounds .....cwts.	22,770	80,765	18,978	52,786
Tartar, Cream of .. ,,	2,627	6,440	9,449	22,206
Zinc Oxide.....tons	824	878	29,626	30,179
All other sorts....value	—	—	287,312	357,756
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....ozs.	160,189	174,304	14,479	14,292
Bark Cinchona ...cwts.	—	1,746	—	7,962
Other sorts .....value	—	—	282,647	275,971
DYES AND DYESTUFFS, ETC.—				
Intermediate Coal Tar Products .....cwts.	—	25	—	448
Alizarine ..... ,,	239	56	5,834	2,427
Indigo, Synthetic.. ,,	—	—	—	—
Other Sorts ..... ,,	2,867	3,783	49,500	99,797
Cutch ..... ,,	5,191	2,375	9,830	4,616
Other dyeing extracts cwts.	5,168	1,793	14,461	5,966
Indigo, Natural ... ,,	—	—	—	—
Extracts for Tanning cwts.	100,966	66,404	92,399	73,436
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, including Blanc Fixe..cwts.	72,938	61,587	17,909	14,689
White Lead (dry).. ,,	14,654	14,966	31,546	28,601
All other sorts .... ,,	76,032	79,983	113,620	116,029
Total of Chemicals, Drugs, Dyes and Colours, Class III, Group N. ....value	—	—	1,258,503	1,589,738

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric....cwts.	2,892	1,543	3,515	2,291
Acid Tartaric ..... ,,	1,141	1,957	6,195	10,223
Ammonium Chloride (Muriate) .....tons	242	262	7,440	7,204
Ammonium Sulphate—				
To France .....tons	1,200	—	14,404	—
,, Spain and Canaries tons	4,229	346	51,169	3,906
,, Italy..... ,,	300	70	3,625	825
,, Dutch East Indies tons	2,091	—	25 087	—
,, Japan..... ,,	1,923	496	23,536	5,642
,, British West India Islands (including Bahamas) and British Guiana .....tons	530	184	6,769	2,109
Other Countries tons	4,656	6,398	55,948	71,316
Total .... ,,	14,929	7,494	180,538	83,798
BLEACHING POWDER.cwts.	26,568	34,407	12,687	14,622
COAL TAR PRODUCTS—				
Anthracene .....cwts.	—	8	—	8
Benzol and Toluol galls.	1,196	479	149	68
Carbolic Acid ....cwts.	18,128	6,324	25,149	11,667
Naphtha .....galls.	6,544	4,011	633	468
Naphthalene .....cwts.	854	243	839	308
Tar Oil, Creosote Oil, etc. .....galls.	1,442,639	402,173	45,789	13,690
Other Sorts .....cwts.	44,195	58,401	26,700	38,044
Total .....value	—	—	99,259	64,253
COPPER, Sulphate of..tons	2,034	1,005	43,101	22,543
DISINFECTANTS, INSECTICIDES, ETC. .....cwts.	39,552	37,758	101,660	103,777
GLYCERINE—				
Crude .....cwts.	122	2,282	260	8,372
Distilled ..... ,,	9,089	15,107	37,054	71,181
Total ..... ,,	9,211	17,389	37,314	79,553
POTASSIUM—				
Chromate and Bichromate .....cwts.	1,505	1,019	3,130	1,842
Nitrate (Saltpetre) ,,	1,098	1,501	2,269	2,900
Other Potassium Compounds .....cwts.	2,722	1,129	14,701	11,531
Total ..... ,,	5,325	3,649	20,100	16,273
SODIUM COMPOUNDS—				
Carbonate.....cwts.	363,893	325,927	107,778	101,032
Caustic..... ,,	120,120	85,028	90,237	65,772
Chromate and Bichromate .....cwts.	1,526	2,684	2,391	3,791
Sulphate, including Salt Cake .....cwts.	276,891	128,588	34,550	17,405
All other sorts .... ,,	40,509	56,549	66,662	69,905
Total ..... ,,	802,939	598,776	301,618	257,905
ZINC OXIDE .....tons	107	74	4,614	3,299
CHEMICAL MANUFACTURES, ETC., all other sorts value	—	—	278,417	304,736
Total of Chemical Manufactures and Products (other than Drugs and Dyestuffs).....value	—	—	1,096,458	970,477
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts..... oz.	164,049	160,568	20,755	16,839
Opium ..... lb.	64	140	114	170
All other sorts ...value	—	—	260,619	274,592
Total..... ,,	—	—	281,488	291,601
DYES AND DYESTUFFS—				
Products of Coal Tar cwts.	8,114	4,321	55,667	43,085
Other sorts ..... ,,	4,501	5,485	5,598	7,511
Total ..... ,,	12,615	9,806	61,265	50,596
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, including Blanc Fixe cwts.	1,041	5,820	511	2,060
White Lead (dry).. ,,	5,194	3,001	12,788	6,430
Paints and Colours, ground in Oil or Water cwts.	53,526	46,423	129,605	107,155
Paints and Enamels Prepared (including Ready Mixed).....cwts.	26,193	32,230	93,493	98,742
All other sorts .... ,,	51,826	53,370	101,714	107,755
Total ..... ,,	137,780	140,844	338,111	322,142

	Quantities. Month ended Nov. 30 1925.	1926.	Value. Month ended Nov. 30 1925. £	1926. £
Total of Chemicals, Drugs, Dyes and Colours, Class III, Group N ..value	—	—	1,777,322	1,634,816
Re-Exports				
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Tartaric ....cwts.	392	74	2,017	442
Borax..... ,,	160	9	192	11
Coal Tar Products. value	—	—	1,027	415
Glycerin, Crude ..cwts.	—	—	—	—
Glycerin, Distilled . ,,	—	—	—	2
Potassium Nitrate ,,	86	83	144	118
Sodium Nitrate ... ,,	957	200	586	121
Tartar, Cream of .. ,,	482	318	1,896	1,342
All other sorts....value	—	—	19,887	16,303
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	10,911	10,140	1,372	1,031
Bark Cinchona....cwts.	278	280	1,421	1,360
All other sorts....value	—	—	41,239	47,208
DYES AND DYESTUFFS—				
Cutch .....cwts.	608	825	870	1,418
Other dyeing extracts cwts.	1,642	203	5,583	833
Indigo, Natural ... ,,	5	13	168	414
Extracts for Tanning cwts.	11,835	1,569	10,919	2,138
PAINTERS' COLOURS AND MATERIALS ....cwts.	5,157	1,108	9,336	4,419
Total of Chemicals, Drugs, Dyes and Colours.....value	—	—	97,431	78,373

Directors of Imperial Chemical Industries

THE above photograph was taken on Wednesday, December 8, previous to the first meeting of the Board of Directors of Imperial Chemical Industries, Ltd. Lord Ashfield, the representative of the B.D.C., was absent through indisposition. The members shown in the photograph (left to right) are :—

Front Row—Sir John Brunner, Mr. H. J. Mitchell, Sir Harry McGowan (president and deputy chairman), Sir Alfred Mond, M.P. (chairman), the Marquis of Reading, and Sir Max Muspratt.

Back Row—Sir Josiah Stamp, Mr. B. E. Todhunter, Mr. Henry Mond, Lt.-Col. G. P. Pollitt, Mr. J. G. Nicholson, and Dr. G. C. Clayton, M.P.

I.G. and Russian Chemical Industry

RUSSIAN engineers (a correspondent states) are to be trained in Germany under the arrangements made by the German Chemical Combine (I.G. Farbenindustrie A.G.) in execution of its three years contract with the "Russgertorg" (Russo-German Trading Co.) to establish depots at Moscow, Leningrad, Charkow, and certain other places. The German I.G. will further take in hand the reorganisation of the Russian chemical industry and supply the "Chimugol" and other Russian concerns with technical workers.

Cane Cream, a New Food Product

A NEW product called "cane cream" has been originated as a result of experiments by the Bureau of Chemistry of the United States Department of Agriculture, and 1,000 cases of this new product are to be made by a Louisiana sugar factory during the present season for trial distribution to retail trade. The new product is made entirely from the juice of the sugar cane. It has the colour of cane syrup and the smooth, attractive consistency of the soft centres of chocolate-coated cream candy.

The Chemical Engineering Conference

Discussions on the Papers

In last week's issue of THE CHEMICAL AGE *a summary was given of the papers read at the conference of the Institution of Chemical Engineers held in London. Below we publish an account of the discussion which followed the reading of the papers.*

IN discussing the paper on "The Control of Chemical Plant Operations by Statistical Methods," by Messrs. D. Rider and T. C. Finlayson, Mr. S. J. Tungay said the paper suggested the danger of over-regulating control in the chemical as well as in other industries, if similar methods to those described by the authors were adopted. The system described in the paper seemed to him possible only in some extremely large undertaking, and looking at the details of it, one was so impressed by the large number of reports from one department and another, that it seemed that a great deal of the time of those concerned would be taken up in preparing these reports instead of looking after the business. In this connection the speaker related the case of a friend who had been collecting statistics in a Government Department for thirty years which were regularly put into pigeon-holes and never looked at. The reason given was that they might be required one day, and the elaborate system outlined in the paper seemed to lend itself also to the collection of an enormous amount of statistics, at considerable expense, which might or might not be required. The compilation of statistics of the nature referred to in the paper should be made as simple as possible, in order to avoid the heads of departments, foremen, and others being compelled to devote time to them which ought to be spent on the plant.

Complication or Simplicity

Mr. Rider said the system was a great deal simpler than the many details in the paper might lead one to believe. He agreed that every endeavour should be made to avoid multiplicity of reports, but the system described had been evolved as the result of practical experience, and had been found to save an enormous amount of time. When he first went on to these works he found himself faced with a mass of reports of all kinds, of which he could make nothing. As a matter of fact, the very condition of affairs existed which Mr. Tungay had suggested ought not to exist, and it had been remedied under this system; the plant manager did in those days have to spend a considerable amount of time preparing his reports each day, as did the heads of other departments, and there had been a great simplification under the system as described, the idea being that the works manager should have prompt information of any failures in output, efficiency or economy. As a matter of fact, the bulk of the work was done by the statistical department, and there were not actually more than about a dozen individual reports from the departments.

Mr. Robert Ray said that in his works a similar system to the one described in the paper had been instituted, and apart from a few initial difficulties, which were soon got over, it had worked exceedingly well.

Professor J. W. Hinchley said that the apparent complication of the system was really an advantage, because it provided the certainty that the actual facts would be recorded, and did not leave any margin for the workpeople to put anything in which was not fact. The very complication of any such system—where the complication was of small dimensions, as he agreed was the case here—was its simplicity, for that reason, because it ensured the accurate working of the system.

The Results of War Experience

The President (Sir Frederic Nathan) said that the fact at the bottom of this whole question of taking statistical records was stated early in the paper, viz., "In many industries the margin between cost and receipts has become so small that the closest attention to output and efficiency is necessary in order to insure the payment of dividends." That margin could only be arrived at by close and careful study of all the items that went to make up the cost of the finished article. It seemed to him that the scheme outlined by the authors must go a long way to ensuring the scientific management of a business, and its control from the point of view of profit-making. A reference was made to process efficiency, and that was very important, not only to conserve stocks of raw materials, but also to reduce costs.

His branch of the Explosives Department during the war—the Propellants Branch—instituted a system of process efficiency which enabled a check to be taken on all the factories that were controlled, as regards the raw material used. That system was in force in fifteen or sixteen factories, and resulted in a considerable reduction in cost, as well as in making raw materials go as far as possible. From the returns so obtained it was known what raw material ought to be used for a particular purpose, say, acids or guncotton or nitrate of glycerine, and if there was what was considered to be more than a fair consumption of raw material, after taking local conditions into account, the Ministry only paid for what it considered to be the fair amount. The whole principle of process efficiency was devised to prevent waste and to get the utmost from the raw materials, and therefore it was obviously one of the factors of greatest importance in costing the finished article and in bringing the cost down to the minimum.

Discussion on Refrigeration

Mr. T. Thornley, discussing the paper on "Refrigeration in the Chemical Industry," read by Mr. H. M. Dunkerley, asked how the purity of liquid ammonia was determined by the author, because he had found some difficulty in doing this for refrigeration purposes. Again, what precautions should be taken to prevent inert gases getting into a refrigerating system? The thought had struck him that there might be some decomposition of ammonia into nitrogen and hydrogen, and he had made some tests to try to prove it, but without success. As regards the use of calcium chloride in the refrigerator to transfer the cold from the ammonia and use it as a refrigerating medium, was there any serious disadvantage about the higher freezing-point of sodium chloride, and why should it not be used instead of calcium chloride? One difficulty in connection with refrigeration not mentioned in the paper was corrosion. Calcium chloride was extremely corrosive of the mild steel pipes used in refrigerators, and he had been concerned with one very serious accident arising from this cause.

The Use of Low Pressure Steam

Dr. H. W. Hebblethwaite (British Dyestuffs Corporation) asked for an approximate figure of the cost of power per ton of ice produced in the ordinary ammonia compression plant, say, a 60 to 100-ton plant per day. One other question concerned the relative advantage of the absorption refrigeration plant. In his case there was an almost unlimited amount of low pressure steam at 20 to 25 lb. pressure. Would it pay, and was there any chance of that being used in an absorption plant for making, say, sixty tons of ice per day instead of using an ammonia compression plant with power at 0·4d. per unit? Had the author any figures for the efficiency of the application of the brine to cooling purposes, and also with regard to the heat efficiency when using an ordinary jacketed pan? He himself had recently made some tests of heat transfer with a jacketed pan, and got approximately 36 per cent. thermal efficiency. Was that a reasonable figure for the transfer of cold, as it were, *i.e.*, the brine efficiency instead of heat efficiency? Could the author suggest any other method than a jacketed pan, which was obviously inefficient? He had tried several methods of metering brine, and the best was clumsy, viz., a V notch meter. Was it possible to get a reasonably cheap and efficient meter?

Mr. Dunkerley said that some of the questions that had been put to him were really for the chemist and not the engineer to answer. As regards the evolution of inert gases, he knew of one plant which had been in operation for ten or twelve years, and quite regularly they could draw off from the condensers small quantities of gas. It had to be done once a week or once a fortnight. On the other hand, he knew of many plants which had been operating for quite a number of years in which there had been no evolution of gas.

Reference had been made to the corrosion effects of calcium chloride, and it was suggested that sodium chloride should be used instead. As a matter of fact, this was even more

corrosive—about three times as bad. He did not hold any brief for calcium chloride, but in practice he did not know of anything better. The one point about calcium chloride was that tests should be carried out regularly to see that it remained neutral. A plant could be tested for acidity and alkalinity and be found all right, but at the end of, say, two years, although there had been no addition, it would be found to have gone either acid or alkaline, and then the corrosion effect was noticed. Galvanised metal was often specified for refrigeration plants, but he personally did not like it. He would rather have ordinary metal and give it a coating of bitumastic paint once a year. That had been proved to be much better than galvanising. As to the cost of power per ton of ice, that varied tremendously in different parts of the world. The power might be from 2¼ to 3¼ h.p., but he could not give it more precisely, because it depended upon so many things. He knew of plants in Edinburgh and Glasgow, only a matter of fifty miles apart, which gave very different figures owing to the difference in local conditions. The use of low pressure steam had been mentioned, but he did not know of a case in which it had paid to use it in the manner suggested.

Berginising Fish Liver Oils

Bearing on Origin of Petroleum

At a meeting of the Institution of Petroleum Technologists held at the Royal Society of Arts, John Street, Adelphi, London, on Tuesday, a paper entitled "A Contribution to the Study of the Origin of Petroleum: The Berginisation of Fish Liver Oils" was contributed by Dr. W. R. Ormandy, E. C. Craven, Professor I. M. Heilbron, and H. J. Channon.

The authors first of all gave a brief account of the discovery of hydrocarbons in fish liver oils. Tsujimoto in Japan had shown that the liver oils from the *Squalidæ* sharks contained the hydrocarbon squalene, while Chaston Chapman in this country had shown that similar oils from *Spinacidæ* sharks contained the hydrocarbon spinacene. More recent work, especially by Heilbron, Kamm, and Owens, had indicated that these hydrocarbons were identical, having the formula $C_{30}H_{50}$. As regards its chemical composition, squalene was an unsaturated hydrocarbon having six double bonds, and was probably a mixture of isomers of a dihydroterpene nature. Squalene was widely distributed among the Elasmobranchs, and also occurred in cod liver oil. In certain of the liver oils of the above fish it occurred to the extent of 50 to 80 per cent. Since it was the first hydrocarbon, the presence of which had been reported in fish liver oils, it became of interest to inquire as to what products would result from treating it with hydrogen at high pressure, and the results obtained were reported in this paper. Reference was made to the fact that squalene might possibly be connected with the origin of petroleum by Spielmann in his book on *The Genesis of Petroleum* (E. Benn, Ltd., London, 1923).

Berginisation of Squalene

A sample of squalene was submitted to the Bergius treatment by the Deutsche Bergin A. G. The reaction temperature was 470° C., the time of action 1 hour, and the initial pressure of hydrogen (97 per cent. pure) 80 atmospheres. The absorption of hydrogen amounted to 3·45 per cent. of the sample by weight. 140 g. of squalene yielded 112 litres of gas, the liquid product being 75 per cent. of the sample used. This liquid product was a mobile fluorescent liquid, which on fractionation gave a number of fractions. The first or "petroleum spirit" fraction was 59·3 per cent. of the whole and had b.p. 180° C. It had the following volume composition: 17·9 per cent. aromatics, 6·8 per cent. unsaturated hydrocarbons, 49·7 per cent. of open chain paraffins, and 25·6 per cent. of closed chain paraffins. The saturated hydrocarbons showed marked traces of the presence of isopentane, while one small fraction contained cyclohexane. A sample of squalene was also subjected to the Bergius treatment in a small bomb by the authors, when the spirit fraction of the liquid product obtained showed on analysis: 10 per cent. unsaturateds, 26 per cent. aromatics, 24 per cent. open chain paraffins, and 40 per cent. closed chain paraffins.

As squalene was a terpene, it was of interest to see how a terpene would behave when subjected to the same treatment. A sample of *d*-pinene was therefore also treated by the Deutsche Bergin A.-G. as above, the reaction temperature being 470° C. 100 g. of pinene gave 126 litres of gas and 75 g. of a liquid product, which on fractionation gave 79·7 per cent. of spirit b.p. 25° to 180° C., consisting of 9·5 per cent. unsaturateds, 34·3 per cent. aromatics, 51·6 per cent. open chain paraffins, and 4·6 per cent. closed chain paraffins (all percentages by volume). The paraffins showed marked traces of the presence of isopentane, and a small fraction contained cyclohexane. Hexane and heptanes were also present.

The authors pointed out that there was a great resemblance between the behaviour of squalene and pinene under berginisation conditions. It was, however, quite impossible to repeat the conditions so absolutely in these bomb experiments as to make it worth while putting the results in parallel columns. There were considerable differences between the first and second experiment on squalene, though every effort was made to work under the same conditions of time, temperature and pressure, but these differences were quantitative and not qualitative. Certain classes of lignite when subjected to berginisation were also converted quantitatively into oil and gas, and the oil so produced was in every way similar to the oil produced from squalene except that instead of traces of phenols 20 per cent. of phenols might be present. If the conditions ever existed which would convert fish liver oil into paraffin-like bodies, then similar conditions might have converted lignites into similar bodies, and the phenols being water soluble might have been washed away. It appeared that phenols had been found in a large number of petroleums. Further work with hydrogenation under pressure might lead to results of real value in the difficult problem of the origin of petroleum.

Tyneside Chemical Industries

Discussion of Development Possibilities

Members of the Newcastle Section of the Society of Chemical Industry discussed "The Prospects for New Chemical Industries on Tyneside" on Wednesday, December 8, at a special meeting held in Armstrong College under the chairmanship of their president, Mr. Alfred Rudge. Mr. Herbert Shaw, chairman of the Newcastle and Gateshead Chamber of Commerce Industrial Committee, attended and explained what had been done to attract industries to Tyneside. The object of the meeting was to assist the local committee which is attempting to advertise Tyneside as a place for new industries.

Professor H. V. A. Briscoe referred to an excellent table, prepared by Dr. Smythe, of the raw materials occurring in the North Eastern area, which had been circulated to members. He said Mr. Shaw had made it very clear how necessary it was that they as chemists should do all they could to assist the Tyneside Development Committee in its work of developing Tyneside industry. A small sub-committee of their Society had undertaken certain work in the matter. One big inducement to the founding of new industries was the abundance of energy, particularly electrical energy, to large consumers. The sub-committee considered that the following industries might be profitably exploited in the district: Electro-chemical or electro-thermal—the manufacture of (1) abrasives, (2) metallic magnesium, (3) peroxides and per-acids. Other products capable of exploitation appeared to include: (4) Bleached barium sulphate and barium salts, (5) zinc salts and lithopone, (6) hydrofluoric acid and fluorides, (7) copper sulphate, (8) fine chemicals, (9) artificial stone, (10) anhydrous aluminium chloride.

Professor Louis declared that North Country coal had passed its zenith, and that they must look for other industries to replace those based entirely on coal. For the next generation the problem would be serious, and it was now time for them to prepare the way. The day when the North Country could compete with the rest of the world in shipping high-class coal was gone, and gone for ever. He urged that attention should be directed to the development of new industries on the basis of the minerals they possessed. Their lead, for instance, was being smelted locally, and there could be no reason why they should export it as pig lead when it could be used in other industries which could be worked at a profit.

Economic Maintenance of Plant

By C. W. Brett

In the following article, Mr. C. W. Brett, managing director of Barimar, Ltd., discusses an aspect of plant maintenance which is too often neglected.

THE advent and growing use of acid-resisting alloy steels in the construction of plant and machinery used in the manufacture of chemicals, has given a new aspect to an old problem

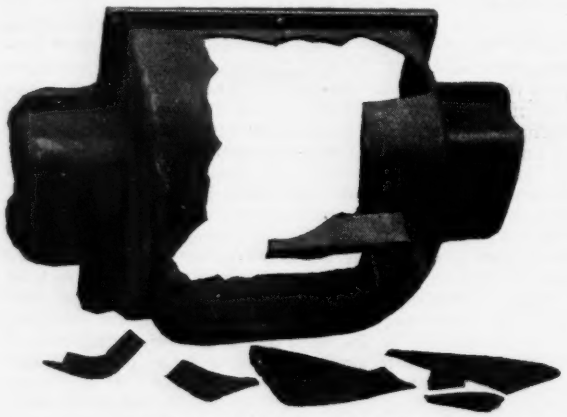


FIG. 1.—A BROKEN CASTING.

—that of efficient mechanical upkeep. The new alloys and ferro-composites are entirely beyond the range of the blacksmith and the ordinary repair agent, and the question of maintaining plant and machinery at the maximum output level has now become a simple issue, involving choice between the replacement of worn, fractured, or damaged units and components, and their rapid, economical, and efficient restoration by one or other of the half-dozen fusive processes now used by the scientific welder.

Owing to the enormous progress which has been made during the last few years in the allied sciences of metallurgy and thermics, replacement is not necessary so often as is usually thought. In the last decade the developments of the high-temperature treatment of industrial metals has been so far-reaching that there is scarcely a device or part which, in the hands of an expert, cannot be rehabilitated so as to yield 100 per cent. efficiency. From this point of view, therefore, replacement merely amounts to the unnecessary scrapping of machinery which is potentially capable of full-load, full-time service—a process which may be fairly described as the antithesis of economy.

Scientific Welding

The broad claims which are made on behalf of scientific welding as a process of mechanical and metallic reconstruction, are based on the following facts: (1) It can be almost instantly applied to the entire reconstruction of all types of plant and machinery, and all industrial metals, often without dismantling or the unloosing of a bolt; (2) It can be employed to effect an average saving on the cost quoted for replacement of from 50 to 75 per cent., while in the case of costly units the economy may be much higher; (3) It is not merely adaptable to the restoration of a unit to its former condition, but can be used to increase strength or dimensions to any given extent, and to correct such design or material weaknesses as manifest themselves in recurrent inefficiency or breakdown.

As regards new metallurgical refinements, rapid, economical, and efficient restoration by any of the present-day fusive agents or thermic processes is only possible when the work is entrusted to trained and experienced operators, having at their backs the direction of an expert metallurgist who has made an exhaustive study of the effects of temperatures ranging from 1,000 to 6,000° F. upon ferro-composites and alloys containing varying percentages and combinations of zirconium, molybdenum, titanium, chromium, tungsten, nickel, cobalt, silicon, manganese, vanadium, etc. Many people—not wholly ignorant of engineering problems—appear to think that alloy steel is a reasonable symbol of indestructibility, forgetting that it is only in certain directions, and when employed in a certain manner for specific purposes, that it manifests great durability, and offers a great resistance to the force of attrition. Directly the crystalline or molecular arrangement is disturbed by deleterious influences, mishandling or (in some cases) subjection to high temperatures, the innate delicacy of these high-grade metals is made manifest. Clearly, therefore, alloy steels demand respect.

Welding Tests

Unfortunately for the progress and prestige of welding, good and bad welds are almost indistinguishable by superficial examination. This fact, which is the charter of the incompetent operator, has compelled the specialist to devise and adopt laboratory and workshop tests, by means of which the soundness or otherwise of the work may be infallibly determined. These include the use of X-rays, radio-metallographs, and photo-micrography, followed by physical investigations in the test room. Among the deficiencies most commonly observed in inferior work are: hard beads, cold shuts, oxidation, distortion, internal stresses, expansion and contraction flaws, imperfect alignment, damage to crystalline structure of parent metal, destruction of special physical qualities, warping, microscopic cracks and fissures, damage arising from too high or too low temperatures, improper thermal preparation, wrong fusive agents or methods, unsuitable "filling," and wrong cooling. Any one of these—and they are frequently found in conjunction—is sufficient to reduce the efficiency of the metal or unit to a minimum, and may be the direct cause of a serious breakdown.

From the foregoing it will be seen that scientific welding necessitates the employment, as circumstances and materials require, of half a dozen separate and distinct thermic processes; the services of qualified and experienced craftsmen; the supervision of an expert metallurgist having an extensive knowledge of high temperature treatment; and the most modern and up-to-date equipment, whereby the work may be put in hand, *in situ* or at the shop, by the process from which best results may be reasonably anticipated. Given these essentials there is no doubt that welding represents the solution of many important problems of mechanical and metallic restoration and upkeep.

Scope of Welding Methods

The following list, though manifestly incomplete, will serve to indicate the devices and units used directly and indirectly in the chemical industry, the repair of which is now regarded by the welding specialist as strictly routine; all parts of all mechanical transport units, including cracked, scored, or damaged cylinders, crankcases, crankshafts, gearboxes, gears, driving shafts, pistons, axles, hubs, metal wheels, chassis frames, light metal sections, radiators, mudguards, lamps,

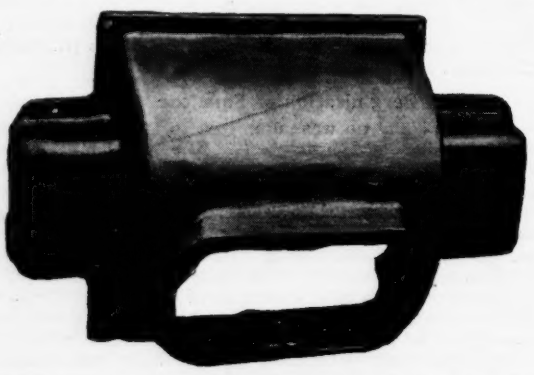


FIG. 2.—SAME CASTING AS ABOVE, AFTER REPAIR BY WELDING.

tools and garage equipment and accessories; furnaces, mechanical stokers, boilers (all types), retorts, crucibles, ovens, condensers, coolers, refrigerating plant, distillation plant, humidifiers, hydro-extractors, centrifuges, mixers (all types), crushers, pulverisers, pulpers, tuns, coppers, compressors, pumps (all types), presses, dryers, fans, blowers, shakers, kneaders, filters, grinders, conveyors, runways, cranes (all

types), derricks, lifts, weighing machines, engine room fittings and accessories, and portable and stationary power units (steam, oil, gas, electric, petrol, wind or water driven).

The illustrations give some idea of the work which can be done by welding. Figure 1 shows a casting, the bottom of which was broken away, many pieces being lost. Figure 2 shows the casting after repair by welding. This job was completed after four days at the fraction of the cost of a new part.

British Industries Fair, 1927

First List of Chemical Exhibits

THE British Industries Fair will be held from February 21 to March 4, 1927, in London and Birmingham. The Fair as a whole will be considerably larger than that held last year. Brief particulars of the exhibits in the chemical section, which is part of the London Fair, are as follows :—

The Association of British Chemical Manufacturers has again made itself responsible for a most interesting representation of the industry at the Fair, and a number of new products will be shown. The section is larger and more representative than the Chemical Section at the last Fair.

The United Alkali Co., Ltd., will have a large stand representing the heavy chemical industry as the basis on which other sections are built up.

Albright and Wilson, Ltd., will show their acid calcium phosphate and a number of other products. They will make a special display of their silicon ester to illustrate the value of this production in the preservation of stone-work.

A. Boake Roberts and Co., Ltd., will show a complete range of all the solvents, plasticisers, and artificial resins required in connection with cellulose lacquers.

Boots Pure Drug Co., Ltd., in addition to their usual display of saccharin, chloroform, alkaloids, etc., will display research chemicals and samples of cyanacetic ester, diethyl malonate, and hydroxylamine hydrochloride.

British Drug Houses, Ltd., among numerous other products propose to exhibit " A.B." Insulin ; analytical reagents ; borocaine and beta-borocaine ; the new local anæsthetics ; tetraform ; aether puriss. B.D.H., a new quality of ether, free from peroxides ; glucose B.D.H. (pure dextrose) ; B.D.H. hippuric acid and hippurates ; sodium tetra-iodo-phenolphthalein and sodium tetra-bromo-phenolphthalein ; and cholesterol.

Joseph Crosfield and Sons, Ltd., will have an attractive exhibit of their household and laundry soaps, perfumes, etc.

The Erasmic Co. will show in addition to their Peerless Erasmic Soap a complete series of toilet necessities as well as their Old London Lavender Water.

The Gas Light and Coke Co., the largest individual maker in the country of tar, ammonia and cyanogen products, will exhibit a large range of products, including coal tar, pitch, creosote, road tar, benzol products, crystal carbolic acid, cresol, liquid disinfectants, pyridine bases of various grades ; naphthalene in various forms, including a special insecticide grade for horticultural use ; beta naphthol ; salicylic acid, both B.P. and technical grades ; bleaching powder, sulphate of ammonia, liquid and anhydrous ammonia, Prussian blues for ink making, etc.

The Graesser-Monsanto Chemical Works, Ltd., will show pure phenol, pure creosols, and cresylic acids and such derivatives as salicylic acid, ortho-cresotinic acid, and both the ortho- and para-chlor phenols.

Howards and Sons, Ltd., will be showing their new solvents : cyclohexanol (sextol) for making textile, laundry, and household soaps ; cyclohexanone (sextone) " medium boiler " type of solvent for pyroxylin lacquers ; cyclohexanol acetate (sextate) a high boiler type of solvent for pyroxylin lacquers ; and diacetone alcohol, " two-type " high-boiling lacquer solvent.

The Salt Union's exhibit will be designed to show the large number of products manufactured from natural brine, and there will be on view a model of the Winsford Vacuum Works where the pure dried vacuum salt is manufactured.

The South Metropolitan Gas Co.'s stand will be a replica of an ancient tavern which will give some idea of the chemical operations of the company.

Thomas Tyrer and Co., Ltd., will make their usual display and in addition will show nickel formate, previously only made in America ; cobalt compounds, now generally recognised as siccatives for paint, enamel, and linoleum ; soda citrate, extensively used in the preparation of dairy products ; and bismuth salts.

The exhibit of Whiffen and Sons, Ltd., will consist of pharmaceutical and technical fine chemicals and specimens of the halogens.

Williams (Hounslow), Ltd., will show a full range of their dyestuffs in crystals and powder, together with articles showing the application of the dyes.

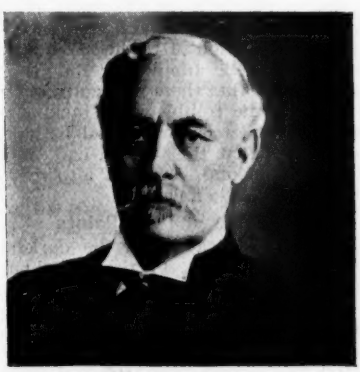
W. J. Bush and Co., Ltd.'s exhibit will be divided into two main groups—(1) essences, essential oils and perfumes, and (2) fine chemicals and cream of tartar.

Johnson and Sons, Ltd., will display a complete range of developing agents required in all branches of photography.

May and Baker, Ltd., propose to show a very wide range of technical and medicinal chemicals.

Death of Sir William Tilden, F.R.S.

WE regret to announce the death of Sir William Tilden, aged 84, at The Oaks, Northwood, on Saturday, December 11. Born in London on August 15, 1842, William Augustus Tilden was educated at various private schools, and after spending a couple of years at Bedford School, studied chemistry at the Pharmaceutical Society and the Royal College of Chemistry in Oxford Street. From 1864 to 1872 he was demonstrator in chemistry to the Pharmaceutical Society, and from 1872 to 1880 science master at Clifton College. In 1880 he became professor of chemistry and metallurgy at



Mason College, Birmingham, since merged in the University, and in 1894 he succeeded Sir Edward Thorpe in the chair of chemistry in the Royal College of Science, South Kensington, retiring in 1909 as Emeritus Professor of the Imperial College of Technology. He served as president of the Institute of Chemistry in 1891-94 and of the Chemical Society in 1903-5, was a Fellow of the Royal Society, and received a knighthood in 1909. His numerous published researches dealt with the constitution of the terpenes, with the preparation of synthetic rubber from isoprene, and with specific and atomic heats. He was the author of a number of books on chemical subjects, the last being *Famous Chemists : The Men and Their Work*, which appeared in 1921.

Paint and Varnish Merger

AN important amalgamation in the paint and varnish industry has recently taken place by the fusion of interest of the Indestructible Paint Co. and Standard Varnish Works (of Great Britain). The latter company has for some years past marketed the products of Standard Varnish Works, New York. All these products, together with the specialities of the Indestructible Paint Co., will be manufactured in the large factory at Park Royal, Willesden, the two companies operating under the style and title of " Indestructible Paint and Standard Varnish, Ltd." The combine will be still further strengthened by the financial interest and close co-operation of the London Electric Wire Co. and Smith's, Ltd., who will continue to act as the selling agents for Great Britain of the " Standard " insulating specialities.

The Chemistry of Painting

Oil and Colour Chemists' Discussion

On Thursday, December 9, the Oil and Colour Chemists' Association and the Incorporated Institute of British Decorators held a joint discussion in the Painters' Hall, London, on "Problems in Painters' Work," Mr. Arthur Jennings (president of the Institute) taking the chair. Five subjects had been selected for discussion, but there was not time to deal with them all fully.

Mr. Stewart Green (past president of the Institute) dealt with the cracking of varnishes, and said he was unable to offer a remedy for it, nor, in his long experience, had he been able to prevent it. No matter how correctly the work of the varnish was prepared or how much it was impressed upon the workmen that the job must not go wrong, cracking occurred.

Speaking on behalf of the chemists on the same subject, Mr. R. G. Daniell said that cracking of varnish was due to four causes: ageing, faults in manufacture, faults in application, and finally, local conditions. The chemistry of oils and gums was not sufficiently known; we did not even know the composition of linseed oil yet; and in these circumstances the manufacturers were absolutely at a loss when it came to the changes which occurred in the composition of these oils and gums when subjected to the heat treatment which was the essential part of varnish manufacture. The trouble was that the problems involved were far too large for any one manufacturer, and it was hoped that the work of the newly-formed Research Association would throw considerable light on them. Another difficulty in manufacture was the excessive use of dryers. Dryers were put in to hasten the oxidation of the oil, and that action was, in the main, catalytic. The trouble was to be able to stop the action of dryers when they had completed their function of the first oxidation; if that could be done it would be admirable; but the action still went on, with the result that there was contraction and cracking. A great deal of the trouble with cracking of varnishes was also due to the undercoat, which might have five times the rate of expansion that the varnish had, and then there must inevitably be cracking. He had also met with a few cases of cracking in cellulose finishes.

Darkening of Lead Paints

Reviewing the possible causes of the darkening of lead paints on outside work, Mr. J. Parrish put them under two main headings: 1, darkening due to the deposition and retention of soot and grit; and 2, darkening due to the formation of lead sulphide. He said that in the early stages of its life, the white lead film was comparatively soft, and its specific nature appeared to be such that soot and grit, when once deposited upon it, readily obtained a firm holding, and eventually became embedded as part of the film. On the question of darkening due to the formation of lead sulphide, it would be interesting and instructive to ascertain the proportion of the cases of darkening of lead paints actually due to sulphide formation. There was extreme difficulty in obtaining accurate and reliable data as to the past history of actual cases of darkening, and the need was clear for active co-operation between the manufacturers, chemists, decorators, and property owners. A considerable amount of investigatory work had been carried out at Brimsdown. The results obtained indicated that, for a given period of exposure and a given type of paint, the amount of blackening depended upon the age of the paint film, the concentration of the sulphuretted hydrogen, and the presence of moisture. The only satisfactory method for removal of blackening, apart from actual repainting, appeared to be treatment of the surface with a solution of hydrogen peroxide, which oxidised the black sulphide to white sulphate.

Drying of Paints

As regards the drying of paints, Mr. R. G. Browning said that the chemist usually prepared his paint from the point of view of an average use, and difficulties arising from faults in preparation or the use of a wrong paint for a particular purpose could hardly be laid at the door of the manufacturer. Given a suitable paint, the foundation of success was satisfactory preparation of the work. Drying was usually accepted as being a gradual process of oxidation, but in our present state of knowledge we were not able to point to a definite stage and say that drying had been reached. It was all a question of degree. Several American investigators had produced instruments for testing whether paints were dry, but personally he did not think these helped very much, because, from the purely chemical point of view, drying was a gradual process continually going on. Ordinarily, when we spoke of a paint being dry, we meant that it was dry enough to take another coat without rubbing up.

Dr. J. J. Fox said there had been over 200 different communications to the technical chemical press on the subject of the drying of paints, but the fact was that we did not really know why a drying oil did dry. It was said to be a partial oxidation, and that was true, but there was another function of the oil, and that was the getting together of the molecules so that they formed a sort of jelly-like solid which later on would apparently dry to an elastic surface. It might, however, be a brittle surface or a hard surface, or it might go to the other extreme and give a surface which would not dry. From the practical point of view, however, we could say when a surface was dry and those interested should consult the specification now being drawn up by the British Engineering Standards Association, where the conditions under which a varnish or a paint could be considered dry were defined. The action of light was important, and he looked forward to the day when we should have artificial sunlight lamps and be able to see a painted surface dry under our eyes.

Progress in Nitrogen Fixation

Work at Billingham

At a meeting in connection with the Cardiff Technical College on Thursday, December 9, Sir Alfred Mond, M.P., had intended delivering an address on science, research, and industry, but was unavoidably absent. His place was taken by Captain F. A. Freeth, F.R.S., head of the research department of Brunner, Mond and Co., who, in the course of his address, said that it had been urged sometimes against science that she had directed her results to rendering war more destructive and horrible. It was true that science in the late war did, as it were, add a new terror to death, but let them not forget that Nature herself was sometimes more deadly and relentless than any human agency of destruction. The influenza plague at the close of the war was responsible for more casualties than occurred among all the combatants. It was not too much to say that the future of civilisation would depend entirely on science. This country for decades past had been living on the produce of the vast, hitherto untouched, virgin plains of the world. Though by no means exhausted, such agricultural lands were already beginning to require larger and larger quantities of nitrogen. Up till recently all such material either came from the nitre fields of Chile, the end of which was in sight, or as a by-product from the gas and coke industries. The combined output of these two services would probably be insufficient to-day were it not for the establishment of the synthetic nitrogen industry. The great corporation by whom he was employed had completed what he thought they would agree was the most brilliant chemical technical achievement of this country in this generation. At Billingham they had erected a huge plant for the extraction of nitrogen from the air, which nitrogen was, as he had already said, essential for their food supplies, and could, if the dreadful necessity ever arose, maintain them in war. The very first step of the directorate in beginning that industry was to build a large, splendidly-equipped, research laboratory.

At the moment the internal constitution of the atom had no direct industrial bearing. It was, however, possible and even probable that some great industrial revolution might eventually result from this revolution in thought. But he would particularly impress on them that what they needed in industry at the moment was what might be called classical science. Having given striking examples of the unsuspected connection between apparently quite useless scientific observations and eventual industry, Captain Freeth said that every manufacturer should study exhaustively those branches of science which were directly concerned with his own business. They could not afford to leave so-called pure science entirely to the universities. Chemistry only began to be a science a hundred years ago, and since that time it had indicated one of the greatest advances of mankind, and its results had had the greatest significance to civilisation.

Indian Chemical Notes

(From Our Indian Correspondent.)

The Government of India have referred the case for the protection of the match industry to the Tariff Board. The present rate of duty on matches imported from abroad is Rs.1·8 per gross, which represents a duty of more than 100 per cent. This duty, though meant for revenue, has had a protective effect and since 1922, when the present duty was first imposed, numerous match factories have been established in India, some of them using indigenous woods and others wood imported in logs from abroad. Concurrently with this, however, there has been a decline in revenue. The Tariff Board is, therefore, asked to report at what rate import duty should be fixed in order to give the industry just the amount of protection it requires and whether alternative measures of protection could suitably be adopted.

A number of large and up-to-date factories have been established in and near Calcutta, and the approximate output of these factories is 13,000 gross boxes of matches per day. The smaller match factories using hand machines have now ceased to exist. Most of the factories are using imported logs, chiefly from Sweden and Siberia. Little advance has been made in the utilisation of indigenous species chiefly on account of the scattered occurrence of these woods, and also because of the unfavourable railway rates. Successful experiments have been carried out by the industrial chemist on the bleaching splints manufactured from Gengwa wood. Schemes have been prepared by the Industries Department for match factories. The chemical composition of the matches and kindred problems have also been studied with the help of power-driven laboratory machines.

Agricultural Research in Sind

The extensive scheme of agricultural research in Sind is now on its way to being put into operation. It may be summarised as follows :—(1) To determine the crops and types of crops which can be grown to the best advantage under barrage conditions ; (2) To determine the rotations of crops and of water which will best suit the circumstances ; (3) To determine the effect of barrage watering on the development of salt. So far most attention is being paid to the first of these three activities. At the present time in Sind there is only one dominating crop. Now a list of eight crops which might be sown has been prepared, and each of these is being carefully studied.

Boot and Shoe Making

The Government of Bengal are starting a boot and shoe making department in the Calcutta Research Tannery. At present, at a modest estimate, about 50,000 pairs of boots and shoes of modern types are made every month in Calcutta by hand labour. At least 90 per cent. of these are being made under Chinese control and management. From this it may be assumed that the Chinese have practically captured the shoe-making industry, while the Punjabis are largely interested in the retail leather trade. The reason why the Chinese have been able to capture the industry is that they know the practical side of the work thoroughly. The department that is now being started will incline especially the students of the well-to-do classes to learn the trade, and thus considerably relieve the unemployment that now exists.

Pigment Finishes

According to the report of the Industries Department, Bengal, the industrial chemist has been able to prepare a pigment finish by suspending finely powdered yellow ochre in neutral shellac solution. The latter was prepared by neutralising an alkaline shellac solution by adding a sufficient quantity of bichromate of potash. Such a solution was found to hold 2 per cent. by weight of finely powdered yellow ochre in suspension for a considerable length of time. It was observed from the experiments carried out that the finer the powder the longer the time required for the pigment to settle down and hence the better the finish. A little brown aniline dye was used to brighten the colour of the finish, and when applied on brown leather in conjunction with the ordinary seasoning it was found to produce a satisfactory result.

Distillation of Inferior Coals

Commercial Exploitation Beginning in Great Britain

During the discussions at the recent meeting of the Institution of Fuel Technology, references were made by various speakers to the use of inferior grades of coal for distillation and other purposes. Sir Philip Dawson said that there were millions of tons of cannel coal dumped around the Scottish mines, and analyses which he had made of samples taken at random showed that they contained anything from 20 to 30 gallons of oil per ton. The cannel coal occurred in layers in the black coal, and in some cases it did not pay to extract the black coal because it was necessary to extract the cannel at the same time. The cannel coal contained 80 gallons of oil per ton, so that it was eminently suitable for distillation, and did not present the difficulties encountered in connection with various classes of oil shale. A plant was being put into action in Scotland for the utilisation of these practically useless materials for producing oil and gas. Mr. E. H. Cunningham Craig said that there were cannels in this country—or rather terbanites—which would yield anything up to 70 gallons of good oil per ton ; there were a great many which would yield 50 gallons per ton, and 5 gallons of scrubbed spirit. It was possible, without putting any value on the residues, to make oil of sufficiently good quality to pay for all the work and leave a very handsome profit. This had been tried, and was to begin commercially very shortly in England and Scotland.

Safeguarding of Key Industries

The Board of Trade give notice that representations have been made to them under Section 10 (5) of the Finance Act, 1926, regarding the following articles : acetone, furfurol, nickel hydroxide, piperazine citrate.

Section 10 (5) of the Finance Act, 1926, is as follows :—

" The Treasury may by order exempt from the duty imposed by section one of the Safeguarding of Industries Act, 1921, as amended by this Act, for such period as may be specified in the order, any article in respect of which the Board of Trade are satisfied on a representation made by a consumer of that article that the article is not made in any part of His Majesty's Dominions in quantities which are substantial having regard to the consumption of that article for the time being in the United Kingdom, and that there is no reasonable probability that the article will within a reasonable period be made in His Majesty's Dominions in such substantial quantities."

Any person desiring to communicate with the Board of Trade with respect to the above-mentioned applications, should do so by letter addressed to the Principal Assistant Secretary, Industries and Manufactures Department, Board of Trade, Great George Street, S.W.1, within two months from the date of this notice.

Naylor Bros.' Annual Conference Dinner

The annual sales conference in connection with Naylor Bros. (London), Ltd., now a section of Nobel Industries, Ltd., was held at the Castle Hotel, Windsor, on Thursday, December 9. Mr. S. S. George (managing director) presided and there was a large attendance. During the proceedings a cordial message was read from Mr. Naylor, the retiring managing director. The toast of " The Representatives " was proposed by the Chairman and responded to by Mr. C. J. Hall ; that of the " Ladies and Guests " was proposed by Mr. H. S. Naylor and replied to by Major L. J. Barley. Prizes were given to several representatives, and Miss Marion Browne and Mr. Ivor Walters contributed songs.

Future of Woollen and Worsted Research Association

The Research Association for the Woollen and Worsted Industries is about to enter on a new phase of its existence. Financed in the main since its start, six years ago, upon a co-operative basis, it has received substantial Government aid, but in the present state of the national finances this aid is diminishing, and two years hence the organisation will have to be entirely self-supporting. It cannot maintain its work on the scale on which it has been run hitherto unless it has an increased membership from the trade ; and, accordingly, a vigorous propaganda is about to be entered upon to show the members of all branches of the trade using wool the worth of its work.

From Week to Week

DR. E. L. HIRST has been appointed lecturer in the department of chemistry of the University of Birmingham.

THE LIBRARY OF THE CHEMICAL SOCIETY will be closed for the Christmas Holidays at 1 p.m. on Thursday, December 23, and will reopen at 10 a.m. on Wednesday, December 29.

THE SWEDISH CHEMICO-TECHNICAL INDUSTRY is working under favourable conditions, except the match industry, which has been working five days per week since the middle of August.

THE EUROPEAN STEEL CARTEL, which at present includes Germany, France, Belgium, and Luxembourg, is likely, as the result of recent negotiations, to be extended to embrace Austria, Hungary, and Czecho-Slovakia.

THE KUHLMANN DYESTUFFS CORPORATION is believed to have completed negotiations with other French industrialists for the purchase of the Mulhouse factory of the Alsatian Products Co. German interests are not affected by this deal.

MR. HARRY WRIGHT, head of the Physics and Engineering Departments at Dewsbury Technical College, has been appointed principal of the College, in succession to Mr. H. J. Taylor, who retires at the end of the year, after more than 30 years' service.

A FIRE OCCURRED on Wednesday at the varnish works occupied by Langston Jones and Samuel Smith, Ltd., oil refiners, in Weston Street, Poplar. The firemen were able to prevent the fire from damaging the adjoining chemical works, occupied by Messrs. Boomes.

RECENT WILLS INCLUDE: Mr. Alexander Mitchell Martin, analytical chemist, late of Hillview, Twechar, Dumbartonshire, £4,337.—Mr. Ambrose Petrocokino, of Pangbourne, Berks., lead, oil and colour merchant, of Clark's Lead Works, Reading, £31,502.

DR. THOMAS IREDALE, lecturer in Armstrong College, Newcastle-upon-Tyne, has been appointed lecturer in chemistry in the University of Sydney, while Mr. Horace Finnemore, of Guy's Hospital Medical School, London, has been appointed lecturer in pharmacy.

PROFESSOR ROLLA, OF FLORENCE, claims to have discovered element number 61, to which he has given the name Florentium. It should be noted that Professor Urbain, who has done much work on the rare earths, has previously made a claim to the discovery of the same element.

THE IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY held its annual dinner at the Hotel Cecil on Monday. Sir Thomas Holland, rector of the college, presided, and among others present were Sir Alfred Mond, Air Vice-Marshal Sir Sefton Brancker, Mr. F. H. Carr, Sir Frank Heath, Sir Frederic Nathan, Colonel H. T. Tizard, and Professor W. P. Wynne.

AT THE RAMSEY CHEMICAL DINNER, held on Wednesday, December 8, in Glasgow, Sir Gregory Foster, provost of University College, London, proposed the toast of "Sir William Ramsay and His Profession." Professor G. G. Henderson, who replied, mentioned that he began his studies in chemistry in the last year that Sir William Ramsay was in the University of Glasgow. Sir Max Muspratt was unable to be present, owing to a meeting of the board of I.C.I. in London.

IN THE HOUSE OF COMMONS, on December 14, Mr. Hayes asked whether the President of the Board of Trade was aware that the increase in retail prices of soaps, 63 per cent. fatty acids, was 133 per cent. over pre-war price, whereas the increase in cost of raw materials was less than 8 per cent. Sir P. Cunliffe-Lister replied that the retail price of household yellow soap was 70 per cent. greater than in July, 1914. The prices of raw materials had risen to a less extent, but there were other factors entering into the cost of production, and he did not think the position such as to demand special action on the part of the Government.

A NEW RESEARCH LABORATORY was opened at East London College (University of London), on Tuesday, by Mr. Edmund de Quincey, chairman of the college council. The laboratory is the gift of Mr. and Mrs. Henry Cohen, in memory of their son David, a former student at the college, who died in May, 1925. Mr. de Quincey said that the laboratory for research in inorganic chemistry was very much needed, though unfortunately they received it through the death of Mr. Cohen, whose career gave great promise. Professor J. R. Partington, head of the chemistry department, received the gift in the name of the college.

COLONEL JOHN KYNASTON'S APPEAL against conviction at the Central Criminal Court, where he was fined £10 for, it was alleged, aiding an offence against the Dangerous Drugs Act, came before the Court of Criminal Appeal on Monday. The Lord Chief Justice said that the appeal had no merits, but must succeed on the ground that the Dangerous Drugs Act, 1925, under which proceedings had originally been instituted, was not yet in force, as the Order in Council necessary had not yet been made. The conviction was therefore quashed. It may be added that the Act in question was framed to meet the provisions of the Geneva Convention of 1925. This has been ratified by the British Government, but not by some other Powers. If and when it is fully ratified, the Dangerous Drugs Act, 1925, will be put into operation.

JOHN HALSTEAD, of Burnley, was sentenced on Tuesday, at Penrith, to four months' imprisonment for obtaining £5 by false pretences by representing himself as a manufacturing chemist.

MR. D. MILNE WATSON, LL.D., is among the signatories to the report on "Education and Industry," just issued by the committee appointed by the President of the Board of Education and the Minister of Labour.

AMALGAMATED ANTHRACITE COLLIERIES, LTD., held their annual general meeting in London on Wednesday, Sir Alfred Mond being in the chair. The scheme of amalgamation with United Anthracite Collieries, Ltd., was approved.

MR. WILLIAM NOWELL has been appointed director of the Amani Institute of Agriculture and Research in British East Africa. Prior to the war the Amani Institute was under the German Government, but since 1914 it has been closed.

A BERLIN REPORT states that the I. G. Farbenindustrie have denied the planning of reduced export prices on their rayon to offset recent American reductions; but the Glanzstoff and Bemberg companies are said to be meeting shortly to decide counter measures.

AFTER LONG NEGOTIATIONS Russian Oil Products, Ltd., have secured a site, some two acres in extent, adjoining the Sutton Harbour branch line of the Great Western Railway at Plymouth, upon which it is intended to construct an extensive waterside depot.

FREDERICK BODEN HEATH, of Runcorn, pleaded guilty before the Runcorn magistrates to two charges of stealing lead, the property of the United Alkali Co., on October 28 and 29. The lead was taken from the Weston Works of the company. He was sentenced to two months' hard labour.

AN EXPLOSION AND FIRE occurred at the works of Rissik, Fraser and Co., ebonite dust manufacturers, Croydon, on Monday. The outbreak is believed to have been caused by a spark from a grinding machine, and the effect on the inflammable ebonite dust caused the explosion. Two men were injured, and valuable machinery destroyed. The damage is estimated at £10,000.

APPLICATIONS ARE INVITED for the following appointments: Lecturer in Pharmacy and Chemistry at the Portsmouth Municipal College. Revised Burnham scale. The Secretary, Offices for Higher Education, the Municipal College, Portsmouth.—Professor of Organic Chemistry in the Egyptian University, Cairo. £922 10s. to £1,168 18s., plus travelling allowance. Information from the Director, Egyptian Educational Office, 39, Victoria Street, London, S.W.1. December 31.

THIRTY PERSONS WERE KILLED and 70 injured as the result of the explosion on Monday of a reservoir containing 20 tons of liquid chlorine at a factory at St. Auban, near Digne (France), where the Societé D'Allias et Camargue is engaged in manufacturing chlorine and soda from Mediterranean salt. The explosion wrecked the factory, and much of the further damage and injury resulted from the action of the chlorine. Five of the injured are in a precarious condition, and 25 others were seriously gassed.

THE KALI INDUSTRIE A.-G., in Cassel, has just arrived at an agreement with the Klöckner concern relating to the manufacture of nitrogen in connection with the new fertiliser, Nitrophoska. There is at present no question of the Klöckner concern becoming a member of the potash syndicate. The new nitrogen factory which is shortly to be built as the result of the agreement will probably take the form of the extension of existing premises. The factory will work on the lines of the Claude process, providing negotiations with the French patent holders can be satisfactorily completed.

THE THIRD MEETING of the Nottingham Section of the Society of Chemical Industry was held on Wednesday, December 8, jointly with the Midlands Section of the Society of Dyers and Colourists, Mr. G. J. Ward in the chair. The subject for the evening was "Present and Future Methods for the Valuation of Dyestuffs." Mr. G. F. Hardcastle gave an account of the estimation of dyes by precipitation methods. He dealt with colorimetric and dye trial tests, and gave an account of the work of Rawson (1888) for the estimation of naphthol yellow S by Night Blue. Mr. Hardcastle then outlined the work of Brown and Jordan. The paper was illustrated by experiments. Dr. E. R. Trotman gave an account of the estimation of dyestuffs by titration with titanous chloride, illustrated by experiments. The paper by Dr. E. B. R. Prideaux, on "The Spectrophotometric Method or the Quantitative Absorption of Light by Solutions of Dyes," was unavoidably held over for a future meeting.

Obituary

MR. ROGER WILLIAM WALLACE, K.C., who died suddenly on Monday, at the age of 72. Educated at London Univeristy, he traded for a time as a chemical merchant. In addition to his legal pursuits, he continued to take a practical interest in chemical, electrical, and engineering work, and for some years was a member of the council of Electrical Engineers. Besides many articles on motoring and chemistry, he was the author of a treatise on "The Law of Letters Patent for Invention."

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The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

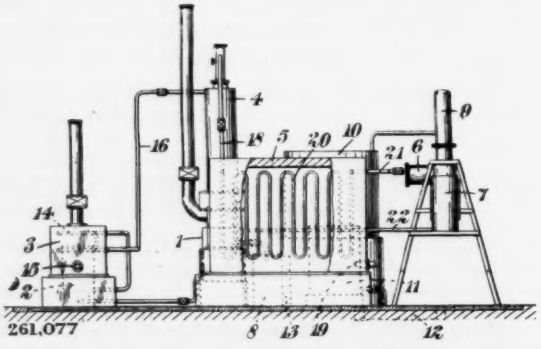
Abstracts of Complete Specifications

261,051. TITANIUM COMPOUNDS, PREPARATION AND USE OF. P. Spence and Sons, Ltd. W. B. Llewellyn and S. F. W. Crundall, Manchester Alum Works, Holland Street, Manchester. Application date, May 8, 1925.

This process is for preparing a new precipitated hydrated basic titanic phosphate, free from impurities, particularly iron, and in the form of a very finely divided granular product which is readily filtered. If the concentration of the titanium solution is excessive, the precipitate formed on adding phosphate is gelatinous and difficult to filter, and in this invention the concentration of TiO_2 in the solution is below 5 per cent., preferably 2·5 per cent. The temperature should be 50° C. or more, up to boiling point. The presence of a finely divided substance in suspension, such as barium sulphate, facilitates the precipitation and enables a more concentrated titanium solution to be used. The presence of chlorides is an advantage, but sulphates should not be present. Free acid should be present to prevent the precipitation of such impurities as iron or chromium, and the proportion may be higher than that usually employed. The precipitation of basic titanic phosphate may be effected simultaneously with that of some other substance such as barium sulphate or calcium sulphate. Examples are given of the production of a white pigment having the composition $3TiO_2P_2O_5.6H_2O$ and a mixed pigment containing titanium phosphate and barium sulphate. Reference is directed in pursuance of Section 7, of Subsection 4, of the Patents and Designs Acts of 1907 and 1919, to Specifications Nos. 206,284 and 195,181.

261,077. CONVERSION OF HEAVY HYDROCARBON OILS INTO LIGHTER HYDROCARBON OILS, PROCESS AND APPARATUS FOR. H. T. WRIGHT, 10, New Bond Street, London, W.1, and F. Esling, The Laboratories, Wandsworth Plain, S.W.18. Application date, August 10, 1925.

The oil to be treated is heated under pressure to the temperature at which the desired fraction would vaporise under the conditions in the vaporiser, but no vaporisation and no cracking take place during the pre-heating. The oil passes from the feed tank 1 through the pump 2 to the retort 3 having a continuous tube 14 of small bore through which the oil passes at a high velocity. The oil is heated progressively in passing through the tube 14, but no vaporisation takes place. The oil then passes to a vaporiser 4 heated externally by furnace gases, and is distributed on to the sides of the vaporiser. The heating is sufficient only to cause partial vaporisation without cracking. Unvaporised oil passes to a cooler 8, and the vapour passes through a pipe 18 to a converter 5 containing small bore tubes 20, where it is heated to cracking temperature. The oil then passes to an expansion chamber 6 where it expands to atmospheric pressure, and some condensation is produced. Uncondensed vapour passes through a dephlegmator 9 to a fractionating chamber which separates kerosene from petrol. The condensed oil in the expansion chamber is allowed to settle, and the deposited carbon is removed. The process is suitable for treating gas oil, light fuel oil, or heavy crude oil.



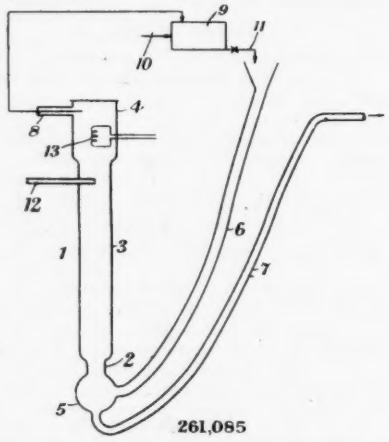
261,080 and 261,164. ELECTROLYTIC APPARATUS. A. E. Knowles, Denecourt, Oldfield Drive, Heswall, Cheshire. Application dates, August 11 and October 19, 1925.

261,080. When water is electrolysed for the production of oxygen and hydrogen a heavy current is sometimes employed, and this may cause an increase in the temperature of the electrolyte which may cause fluctuations in the current density. In this invention the temperature of the electrolyte is controlled by means of tubes through which hot or cold fluid is circulated, and which may be ranged across the ends of the cell adjacent to the ends of the electrodes, and at right angles to the plane of the electrodes. The tubes are flattened and arranged horizontally one above the other with their edges in contact, so that a flat surface of substantial area is adjacent to the ends of the electrodes.

261,164. This apparatus is for automatically controlling the level of the liquid in the electrolytic cells, and for washing the evolved gases. Water is fed to one or more chambers in which the gases evolved from the cells are caused to bubble through the water. This is effected by providing a number of vertical tubes dipping into the water so that the gas bubbles through the water on its way to the outlet. The water then passes to a further chamber containing a float-operated valve which controls the supply of water to the washing chamber and thence to the electrolytic cell.

261,085. CRYSTALLISATION, PROCESS AND APPARATUS FOR. E. C. R. Marks, London. From The Grasselli Chemical Co., 1,300 Guardian Building, Cleveland, Ohio, U.S.A. Application date, August 11, 1925.

A suspension of crystals is maintained in an ascending current of solution, the rate of flow of which progressively decreases. The crystals to be grown are supplied by introducing a small stream of supersaturated solution into the ascending current of solution. The crystallising vessel has three cylindrical vessels 2, 3, 4 of progressively increasing diameter. The crystallising solution is supplied through the pipe 6 to an enlargement 5, and the crystals are discharged through a pipe 7. The crystallising solution passes through an overflow 8 to a receiver 9 where it is reconcentrated, mixed with fresh solution, and returned to the pipe 6. The supersaturated solution is introduced through a pipe 12. Part of the solution applied through the pipe 6 is employed to carry off the crystals through the pipe 7, and the remainder passes into the crystallising vessel. The fine crystals to be grown may be provided by local cooling by means of a small refrigerating coil in the section 3, but are preferably provided



(*Continued on page* 595)

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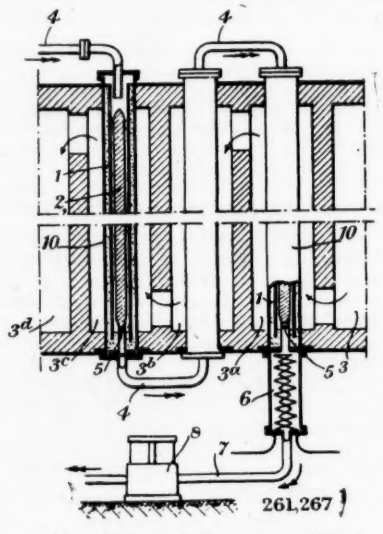
by means of a small stream of supersaturated solution introduced through the pipe 12. The rate of flow through the crystallising vessel is regulated so that only crystals of the desired maximum size sink through the enlargement 5. Finer crystals are carried into the sections 3 and 4 for further growth. More than one size of crystal product may be obtained by employing more than one enlargement such as 5, and withdrawing the crystals from each.

261,133. Arsinic Acids of the Aromatic Series, Process for the Production of. A. J. Ransford, London. From L. Cassella and Co., G.m.b.H., Frankfurt-on-Main, Germany. Application date, September 2, 1925.

Specification No. 240,969 (see The Chemical Age, Vol. XIII, p. 500) describes the production of benzoxazolone-4-arsinic acid by nitrating benzoxazolones and reducing the nitro compounds and transforming the amino derivatives into the arsinic acids, but it is not possible by this process to obtain the isomeric benzoxazolone 5-arsinic acid. 5-nitrobenzoxazolone and derivatives thereof can be obtained by the action of phosgene on 1-hydroxy-2-amino-4-nitrobenzene or a derivative, and these products are reduced, diazotised, and treated with an arsenite. Detailed examples are given of the production of 5-nitrobenzoxazolone, 5-aminobenzoxazolone, 3-methyl-5-nitrobenzoxazolone, 3-methyl-5-aminobenzoxazolone, 3-chloro-5-nitrobenzoxazolone, 3-chloro-5-aminobenzoxazolone, 2 : 1-benzoxazolone-5-arsinic acid, 3-methyl-2 : 1-benzoxazolone-5-arsinic acid, and 3-chloro-2 : 1-benzoxazolone-5-arsinic acid.

261,267. Converting Methane Gas into Hydrocarbons of Higher Carbon Content, Process of. Le Petrole Synthetique Soc. Anon., 165, Quai d'Asnières (Seine), France, and A. Folliet, "Villa La Terrasse," Lozère (Seine et Oise), France. Application date, April 29, 1926.

It is known that methane when passed through a porcelain tube at red heat is converted into ethylene and its homologues such as propylene, with a small amount of acetylene and ethane. The course of the reaction depends on the pressure,



temperature, and velocity of the gas, and it is found that naphthalene is also formed. These disadvantages may be avoided by gradually heating the methane to 950° C. in a very thin stream, and suddenly cooling the products under a low pressure. Ethylene hydrocarbons and other gaseous hydrocarbons of higher carbon content are obtained, and may be employed in the synthetic production of alcohol and liquid hydrocarbons.

The apparatus comprises a number of refractory tubes 1 connected in series by pipes 4, each tube being mounted within a metal tube 10, and containing a refractory cylindrical core 2. The annular space between the two tubes is about 2 mm. Furnace gases are passed through the surrounding chambers 3^a, 3^b, 3^c, from a furnace 3, and the gas to be treated flows through the tubes 1 in counter-current. The issuing gas is suddenly cooled in a water cooler 6, and then passes to a vacuum pump 8. A vacuum of about 20 cm. of mercury is maintained in the system.

261,240. Acyl Halides, Manufacture of. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, and S. Coffey, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, March 15, 1926.

In the manufacture of acetyl chloride by treating acetic acid or an acetate with phosphorus chlorides, sulphur chlorides, phosgene, salts of chlorsulphonic acid, etc., some of the chlorine is lost as hydrogen chloride or sodium chloride, and the acetyl chloride is difficult to obtain free from hydrogen chloride. In this invention, the production of hydrogen chloride is avoided by treating a mixture of acetic acid and acetic anhydride with phosphorus trichloride. The proportions may be acetic acid (100 per cent.) 27·3 parts, acetic anhydride 18·7 parts, and phosphorus trichloride 35·5 parts. Other aliphatic acids may be treated in a similar manner, and other phosphorus trihalides may be used.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention: 242,951 (Gewerkschaft Wallram), relating to manufacture of heavy metal carbides and other difficultly melting compounds, see Vol. XIV, p. 15 (Metallurgical Section); 244,730 (F. Bergius), relating to obtaining gas for hydrogenating coal and hydrocarbons, see Vol. XIV, p. 185; 245,107 (Chemische Fabrik auf. Actien, vorm. E. Schering), relating to compounds of C. C— disubstituted barbituric acids and 4-dimethylamino-1-phenyl-2 : 3-dimethyl-5-pyrazolone, see Vol. XIV, p. 212.

International Specifications not yet Accepted

259,553. Refining Petroleum. Sharples Specialty Co., 23rd Street, Philadelphia, Pa., U.S.A. (Assignees of L. D. Jones, 23rd Street, Philadelphia, Pa., U.S.A.) International Convention date, October 7, 1925.

Petroleum is distilled to remove gas, naphtha, and burning oils, and is then treated to remove wax while still containing impurities removable by clay treatment. Crude petroleum after distillation as above, is cooled to 56° C., diluted with 62 per cent. of naphtha, heated to 38° C., to ensure solution of the wax, gradually cooled to —23° C. and centrifuged. The naphtha is distilled off, and the oil steam-distilled to obtain various grades of lubricants, the cylinder stock being refined by clay. The clay refining may take place before the fractionation.

259,608. Benzanthrone Derivatives. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, und Brüning, Hoechst-on-Main, Germany.) International Convention date, October 10, 1925.

Halogen benzanthrones are treated with hydrogen sulphide, sulphur, or other agent from which sulphur or a reactive sulphur compound is eliminated during the reaction, such as thiosulphates, thiocarbonates, hydrosulphites, or carbon disulphide. Benzanthronyl sulphides are obtained. An acid-binding agent such as sodium acetate or pyridine may be present. In an example, Bz 1-brombenzanthrone is heated with sulphur, sodium thiosulphate, potassium xanthate, or sodium hydrosulphite and acetate in trichlorbenzene or tetrahydronaphthalene, or with sulphur, copper bronze, sodium acetate and alcohol to obtain Bz 1 : Bz 1^1-benzanthronyl-sulphide. A dibrom-Bz 1 : Bz 1^1-benzanthronyl-sulphide may be obtained from dibrombenzanthrone.

259,616. Active Carbon. Verein für Chemische Industrie Akt.-Ges., 62, Moselstrasse, Frankfort-on-Main, Germany. (Assignees of E. Küchler, 164, Mainzerlandstrasse, Frankfort-on-Main, Germany.) International Convention date, October 12, 1925.

Carbon, or spent activated carbon, is activated by treating it in granular form with dry or moist gas containing free oxygen, at an elevated temperature. The carbon is treated in tubes having permeable fireclay walls, and a partial oxidation of the carbon occurs. The speed of the gas, the time of treatment, the thickness of the layer of carbon, and the size of the granules may be varied.

LATEST NOTIFICATIONS.

262,382. Process of treating dye effluents. Darco Sales Corporation. December 3, 1925.
262,397. Process for the production of sulphuric acid. Metallbank und Metallurgische Ges. Akt.-Ges. December 7, 1925.
262,404. Process of obtaining liquid organic substances from gas mixtures. I. G. Farbenindustrie Akt.-Ges. December 3, 1925.
262,405. Purification of alumina. Aluminium Co. of America. December 4, 1925.
262,408. Process for the production of solid ammonium carbonate from its components. Rhenania-Kunheim Verein Chemischer Fabriken Akt.-Ges. December 7, 1925.
262,418. Manufacture and production of dyestuffs containing chromium. I. G. Farbenindustrie Akt.-Ges. December 1, 1925.
262,447. Manufacture and production of phosphorus acids and hydrogen. I. G. Farbenindustrie Akt.-Ges. December 3, 1925.
262,454. Manufacture and production of phosphorus acids and hydrogen. I. G. Farbenindustrie Akt.-Ges. December 3, 1925.
262,455. Purification of hydrogen obtained by the interaction of phosphorus and steam. I. G. Farbenindustrie Akt.-Ges. December 4, 1925.
262,456. Process for the purification of alkali metal cyanide solutions containing sulphides. I. G. Farbenindustrie Akt.-Ges. December 4, 1925.
262,457. Manufacture of indigoid dyestuffs. I. G. Farbenindustrie Akt.-Ges. December 4, 1925.
262,475. Catalytic reactions. I. G. Farbenindustrie Akt.-Ges. December 7, 1925.
262,476. Process for dyeing and printing fibrous materials. I. G. Farbenindustrie Akt-Ges. December 7, 1925.

Specifications Accepted with Date of Application

242,623. Carbonising or gasifying fuel. International Combustion Engineering Corporation. November 6, 1924.
250,897. Amines, the substitution products thereof, nitriles, and tetrazoles, Methods of producing. A. Knoll, H. Knoll, M. Daege, W. Clemm, and K. F. Schmidt. September 23, 1925.
252,020. Zinc alloys particularly suitable for casting. New Jersey Zinc Co. May 11, 1925.
252,310. Coke ovens and the like. Koppers Co. May 23, 1925. Addition to 230,167.
261,814. Cement, Manufacture of. T. Rigby. July 24, 1925.
261,822. Dyeing of cellulose acetate. J. W. Leitch and Co., Ltd., and A. E. Everest. August 11, 1925.
261,850-1. Separating solids from liquids, Apparatus for. Woodall-Duckham (1920), Ltd., and R. Krall. August 28 and 29, 1925.
261,888. Isodibenzanthrones, Manufacture and production of. J. Y. Johnson. (*Badische Anilin und Soda Fabrik.*) October 9, 1925.
261,954. Carbonising processes. W. E. Trent. February 8, 1926.
261,976. Blast furnace slag and the like, Process for treating. A. Crawford and J. Crawford. March 26, 1926.
261,990. Carbon disulphide, Process and apparatus for the manufacture of. A. J. Stephens. (*Zahn and Co., Bau Chemischer Fabriken Ges.*) May 12, 1926.
261,991. Pure potassium salts, Process for producing. E. Niccoli, May 13, 1926.
262,017. Fertilisers containing sulphur and phosphate, Process for the preparation of. B. Bodrero. July 26, 1926.
262,030. Isodibenzanthrones, Manufacture of. J. Y. Johnson. (*Badische Anilin und Soda Fabrik.*) October 9, 1925.

Applications for Patents

Baddiley, J. British Dyestuffs Corporation, Ltd., and Chapman, E. Insecticides, etc. 30,895. December 6.
Baddiley, J. British Dyestuffs Corporation, Ltd., Hailwood, A. J., and Shepherdson, A. Manufacture of valuable products from ligninsulphonic acid. 31,022. December 7.
Baddiley, J. British Dyestuffs Corporation, Ltd., and Hailwood, A. J. Dyes, etc. 31,398, 31,399. December 10.
British Bead Printers, Ltd., and Heynert, F. A. H. Manufacture of condensation products from urea. 30,861, 30,862. December 6.
British Dyestuffs Corporation, Ltd., Hailwood, A. J., and Shepherdson, A. Dyestuffs preparations. 30,896. December 6.
British Dyestuffs Corporation, Ltd., and Moss, H. W. Azo dyestuffs. 31,021. December 7.
Carpmael, W. (I. G. Farbenindustrie Akt.-Ges.). Manufacture of halogen-substituted tertiary aromatic amines, etc. 31,390. December 10.
Carpmael, W. Manufacture of dyestuffs, etc. 31,391. December 10.
Carpmael, W. Manufacture of lacquers, etc. 31,392. December 10.
Coley, H. E. Extraction of oil from shale. 30,989. December 7.
Coley, H. E. Manufacture of zinc. 31,412. December 10.
Coley, H. E. Manufacture of tin. 31,413. December 10.
Fabrique de Produits Chimiques Rohner Soc. Anon. Pratteln. Manufacture of dyestuffs. 30,872. December 6. (France, August 2.)
Hoffman-La Roche and Co. Akt.-Ges., F. Manufacture of ureides of dialkyl, etc., acetic acids. 31,430. December 11. (Switzerland, January 20.)
Hummelinck, M. G. W. Purifying colloidal liquids, etc. 31,161. December 8.
I. G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of barbituric acid soporifics. 30,990. December 7.
I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Separation of gases. 31,382. December 10.
I. G. Farbenindustrie Akt.-Ges. Manufacture of halogen-substituted tertiary aromatic amines, etc. 31,390. December 10.
I. G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs, etc. 31,391. December 10.
I. G. Farbenindustrie Akt.-Ges. Manufacture of lacquers, etc. 31,392. December 10.
I. G. Farbenindustrie Akt.-Ges. and Mond, A. L. Process of bleaching fatty substances. 31,493. December 11.
I. G. Farbenindustrie Akt.-Ges. Catalytic reactions. 30,866. December 6. (Germany, December 7, 1925.)
I. G. Farbenindustrie Akt.-Ges. Dyeing and printing fibrous materials. 30,867. December 6. (Germany, December 7, 1925.)
I. G. Farbenindustrie Akt.-Ges. Production of sodium sulphide. 30,881. December 6. (Germany, January 18.)
I. G. Farbenindustrie Akt.-Ges. Production of cements. 30,882. December 6. (Germany, December 15, 1925.
I. G. Farbenindustrie Akt.-Ges. Manufacture of cellulose esters. 31,154. December 8. (Germany, December 19, 1925.)
I. G. Farbenindustrie Akt.-Ges. Production of fibre half-stuff. 31,264. December 9. (Germany, January 25.)
I. G. Farbenindustrie Akt.-Ges. Production of condensation products of urea and formaldehyde. 31,381. December 10. (Germany, January 12.)
Imray, O. Y., and Soc. of Chemical Industry in Basle. Discharge printing-pastes, etc. 30,991. December 7.
Kreth, W., and Möller, W. Preparation of solutions of hydrofluosilicic acid. 31,051. December 7. (Germany, December 23, 1925.)
Kreth, W., and Möller, W. Manufacture of readily-soluble salts of hydrofluosilicic acid. 31,052. December 7. (Germany, December 23, 1925.)
Luis, C. G. Explosives. 30,988. December 7.
Naamlooze Vennootschap Mijnbouw en Handelmaatschappij. Manufacture of cyanides. 31,275. December 9. (Germany, December 10, 1925.)
New Jersey Zinc Co. Manufacture of lithopone. 31,278. December 9. (United States, February 2.)
Society of Chemical Industry in Basle. Manufacture of dyestuffs. 30,992. December 7. (Switzerland, December 8, 1925.)
Zdanowich, J. O. Manufacture of cellulose derivatives. 31,415. December 10.

Medical Aspects of Chemical Warfare

A PUBLICATION for the use of medical officers, entitled *The Manual of the Medical Aspects of Chemical Warfare*, has been issued by command of the Army Council. It deals with gas poisoning in general, and forecasts new methods in the use of gas likely to be introduced in future warfare. Attention is drawn to the fact that the use of mustard gas is likely to be frequent in future wars, in view of the great developments which have occurred in the use and construction of airships and aeroplanes. Phosgene and chlorine are among the lung irritants specially mentioned with the power of causing death within two hours, while the statement is made that in 81 per cent. of deaths due to poisoning by phosgene and chlorine the death occurred within 24 hours.

Beet Sugar Developments

CUPAR Beet Sugar Factory, the sixth and latest erected by the Anglo-Scottish Beet Sugar Corporation, Ltd., was opened on Saturday, December 11, by Lady Gilmour, who was accompanied by the Rt. Hon. Sir John Gilmour, Bt., Secretary of State for Scotland. A site of 125 acres has been secured at King's Lynn for a beet sugar factory, in which members of the group operating the Cantley, Kelham, Ely, and Ipswich factories are interested. Sir E. W. Tate announced at the annual meeting of Tate and Lyle, Ltd., that they had decided to abandon the project of building a sugar beet factory in Yorkshire.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £37 per ton; powder, £39 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 6os. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 11d. to 3s. 4d. per gall.; pyridinised industrial, 3s. 1d. to 3s. 6d. per gall.; mineralised, 4s. to 4s. 4d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.

SODIUM CHLORATE.—2½d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 7d. per lb. Crude 60's, 1s. 8d. to 2s. per gall.

ACID CRESYLIC 99/100.—2s. 6d. per gall. Steady. 97/99.—2s. to 2s. 6d. per gall. Pale, 95%, 1s. 10d. to 2s. 6d. per gall. Dark, 1s. 9d. to 2s. 3d. per gall.

ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.

BENZOL.—Crude 65's, 1s. 4d. to 1s. 5d. per gall., ex works in tank wagons. Standard Motor, 2s. to 2s. 3d. per gall., ex works in tank wagons. Pure, 2s. 3d. to 3s. per gall., ex works in tank wagons. Steady.

TOLUOL.—90%, 2s. to 3s. per gall. Firm. Pure, 2s. 3d. to 3s. 6d. per gall.

XYLOL.—2s. 3d. to 3s. per gall. Pure, 4s. per gall.

CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6¾d. to 9d.; middle oil, 7½d. to 8d. per gall. Heavy, 8¾d. to 9¼d. per gall. Firm.

NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 3d. per gall. Solvent 95/160, about 2s. per gall. Solvent 90/190, 1s. 3½d. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £8 per ton. Whizzed or hot pressed, £9 per ton.

NAPHTHALENE.—Crystals, £11 10s. to £12 10s. per ton. Quiet. Flaked, £12 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 132s. 6d. to 190s. per ton, according to district.

PYRIDINE.—90/140, 12s. 6d. to 17s. per gall. Nominal. 90/180, 8s. 6d. to 9s. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. 6d. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—8s. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—9½d. per lb. naked at works.

ANILINE SALTS.—9½d. per lb. naked at works.

BENZALDEHYDE.—2s. 1d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—4d. to 4½d. per lb. Quiet.

m-CRESOL 98/100%.—2s. 3d. per lb. Fair inquiry.

p-CRESOL 32/34° C.—2s. 3d. per lb. Fair inquiry.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 9d. per lb. d/d.

NITROBENZENE.—7d. per lb. naked at works.

NITRONAPHTHALENE.—9d. per lb. d/d.

R. SALT.—2s. 4d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—9d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 10s. to £10 per ton. Scarce. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£9 to £10 per ton and upwards, according to grade and locality. Very scarce and in better demand.

IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.

RED LIQUOR.—9½d. to 1s. per gall.

WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 10d. to 4s. per gall., 60% O.P. Solvent, 4s. 2d. to 4s. 3d. per gall, 40% O.P. Both scarce and in good demand

WOOD TAR.—£3 to £5 per ton and upwards, according to grade.

BROWN SUGAR OF LEAD.—£41 10s. to £42 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5½d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—2s. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—5s. 3d. per lb.

ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 6d. per lb. Firm.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 3½d. to 1s. 4½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d per lb.

ACID, SALICYLIC, B.P.—1s. 4d. to 1s. 5½d. per lb. Firm and good inquiry. Technical.—1s. to 1s. 0½d. per lb.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%.

AMIDOL.—9s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—11s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: lump, 1s. per lb.; powder, 1s. 3d. per lb.

ASPIRIN.—2s. 4d. to 2s. 5d. per lb. Good demand.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—8s. 9d. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 3d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 3d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 6d. to 12s. 6d. per lb., all above bismuth salts, according to quantity.

BISMUTH NITRATE.—6s. 9d. per lb.

BISMUTH OXIDE.—13s. 9d. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. per lb.

BISMUTH SUBGALLATE.—9s. 9d. per lb.

BORAX B.P.—Crystal, £27 per ton; powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 8½d. to 1s. 9½d. per lb.; sodium, 1s. 11½d. to 2s. 1d. per lb.; ammonium, 2s. 1½d. to 2s. 3d. per lb., all spot.

CALCIUM LACTATE.—1s. 3½d. to 1s. 4½d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—6s. 6d. to 7s. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—22s. per cwt., 112 lb. lots.

MAGNESIUM CARBONATE.—Light Commercial, £33 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 9d. per lb. net; Synthetic, 11s. to 12s. per lb., according to quantity; Liquid (95%), 12s. per lb.; Detached Cryst., 15s. per lb.

MERCURIALS.—Red Oxide, 6s. 5d. to 6s. 7d. per lb., levig., 5s. 11d. to 6s. 1d. per lb.; Corrosive Sublimate, Lump, 4s. 8d. to 4s. 10d. per lb., Powder, 4s. 1d. to 4s. 3d. per lb.; White Precipitate, 4s. 10d. to 5s. per lb., Powder, 4s. 11d. to 5s. 1d. per lb., Extra Fine, 5s. 1d. to 5s. 2d. per lb.; Calomel, 5s. 3d. to 5s. 5d. per lb.; Yellow Oxide, 5s. 10d. to 5s. 11d. per lb.; Persulph, B.P.C., 5s. 1d. to 5s. 2d. per lb.; Sulph. nig., 4s. 10d. to 4s. 11d. per lb.

METHYL SALICYLATE.—1s. 9d. per lb.

METHYL SULPHONAL.—15s. 6d. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s 4d. per lb.

PHENACETIN.—3s. 9d. to 4s. per lb.

PHENAZONE.—5s. 9d. to 6s. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—81s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. per oz. in 100 oz. tins.

RESORCIN.—4s. to 4s 3d. per lb., spot.

SACCHARIN.—55s. per lb. Quiet.

SALOL.—3s. to 3s. 3d. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb. B.P.C., 1923—2s. 1d. to 2s. 2d. per lb. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d. consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—80s. to 85s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 1s. 11d. per lb. Crystal, 1s. 11d. to 2s. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—10s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 2d. per lb.

THYMOL.—11s. to 14s. 3d. per lb., according to quantity.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—6s. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 3d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 3d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 9d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. per lb.

COUMARIN.—11s. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. 6d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—9s. 9d. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. to 10s. 6d. per lb.

HELIOTROPINE.—4s. 10d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Shui Oil, 12s. per lb. Ex Bois de Rose, 17s. per lb.

LINALYL ACETATE.—Ex Shui Oil, 15s. per lb. Ex Bois de Rose 18s 6d. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—4s. 6d. per lb.

MUSK KETONE.—36s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—10s. per lb.

RHODINOL.—28s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—18s. 6d. to 19s. 6d. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. 6d. per lb.

BERGAMOT OIL.—31s. 6d. per lb.

BOURBON GERANIUM OIL.—12s. per lb.

CAMPHOR OIL.—63s. 6d. per cwt.

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—5½d. per oz.

CASSIA OIL, 80/85%.—8s. 9d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 4d. per lb. Ceylon, pure, 2s. 1d. per lb.

CLOVE OIL.—6s. 9d. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—French 38/40%, Esters, 21s. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—9s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz.

PALMA ROSA OIL.—9s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 25s. 6d. per lb. Japanese, 9s. 6d. per lb.

PETITGRAIN OIL.—8s. 3d. per lb.

SANDALWOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, December 15, 1926.

TRADE is beginning to slacken off, in all probability due to the approaching holidays, but there is a good deal of inquiry in the market for the forward position and quite a substantial number of contracts have been booked.

Prices generally speaking continue very firm, but export demand continues on the quiet side.

General Chemicals

ACETONE is much steadier and is now inclined to rise, the nominal value is about £65 per ton.

ACID ACETIC is in active demand and prices are unchanged for both home trade and export.

ACID CITRIC continues stagnant and price is only nominal at 1s. 2¼d to 1s. 2½d. per lb.

ACID FORMIC in fair demand and the price is unchanged at £52 per ton for 85%.

ACID LACTIC is unchanged at £45 per ton for 50% by weight material with a fairly active demand.

ACID OXALIC has been well called for and price is unchanged at 3⅝d. per lb. to 3¾d. per lb., ex store.

ACID TARTARIC continues quiet and the price is nominally 11½d. per lb.

ALUMINA SULPHATE has advanced in value and has been scarce on the spot, price is nominally £5 15s. to £6 5s. per ton for 17/18%

AMMONIUM CHLORIDE is steadier and to-day's quotation may be taken at £18 10s. to £19 per ton, demand fair.

BARIUM CHLORIDE continues slow at £9 10s. per ton.

COPPER SULPHATE.—Inquiry continues good with price well held at round about £23 to £24 per ton.

CREAM OF TARTAR.—A further advance is to be noted in this market, which can now be taken at from £80 to £81 per ton.

EPSOM SALTS.—Unchanged at £5 10s. per ton, with a keen demand..

FORMALDEHYDE can still be obtained at £43 to £44 per ton, but there are signs of the price stiffening.

LEAD ACETATE continues quite a good market at £44 to £45 per ton for white and £2 per ton less for brown.

METHYL ACETONE is extremely firm at £58 to £62 per ton, according to quality.

METHYL ALCOHOL is quietly steady at £46 to £48 per ton.

POTASSIUM CHLORATE is rather a slow market, but price is well held at 3½d. per lb., makers being well sold ahead.

POTASSIUM PERMANGANATE has been only in moderate demand at 7½d. per lb. for B.P.

POTASSIUM PRUSSIATE is very firm at 7½d., with supplies on the short side.

SODA ACETATE is quiet, but the price is well held at £20 to £21 per ton.

SODIUM BICHROMATE.—A fair business has been transacted at British makers' figures, but even now Continental competition is in evidence.

SODIUM CHLORATE is somewhat easier at 3¼d. per lb. and the demand is small.

SODIUM NITRITE is a quiet market at £20 per ton.

SODIUM PHOSPHATE is firm at £13 15s. to £14 5s. per ton, with a good inquiry.

SODIUM PRUSSIATE continues in good request and is inclined to be somewhat short at 4¼d. per lb.

SODIUM SULPHIDE.—British makers have now announced their prices for next year, which on average are £13 per ton for concentrated and £8 17s. 6d. for crystals, delivered buyers' works, with small concessions for larger buyers; already some substantial contracts have been fixed for next year.

ZINC SULPHATE.—Unchanged and in small demand at £14 per ton.

Coal Tar Products

The market generally for coal tar products is quiet, owing to the approach of the Christmas vacation.

90's BENZOL is quoted at 2s. 1d. per gallon on rails, while the motor quality is quoted at 1s. 11½d. to 2s. per gallon.

PURE BENZOL is worth from 3s. 9d. to 4s. per gallon.

CREOSOTE OIL is unchanged at 7¾d. to 8d. per gallon on rails in the country, while the price in London is from 8¾d. to 9d. per gallon at works.

CRESYLIC ACID is quoted at 2s. 2d. per gallon on rails for the pale quality 97/99%, while the dark quality 95/97% is worth 2s. 1d. per gallon.

SOLVENT NAPHTHA is slightly weaker and is quoted at about 1s. 10d. per gallon on rails.

HEAVY NAPHTHA is unchanged at 1s. 6d. to 1s. 7d. per gallon on rails.

NAPHTHALENES are also unchanged, the 76/78 quality being quoted at £8 to £9 per ton, while the 74/76 quality is worth about £8 to £8 5s. per ton, at makers' works.

PITCH is erratic and there is a considerable difference between buyers' and sellers' ideas of value. To-day's price varies between 140s. and 180s. f.o.b. U.K. ports.

Latest Oil Prices

LONDON.—LINSEED OIL steady at about unchanged rates. Spot, £30 15s., ex mill; December, £29 12s. 6d.; January-April, £29 17s. 6d.; May-August, £29 15s. RAPE OIL quiet. Crude, extracted, £45 10s.; technical, refined, £47 10s., ex wharf. COTTON OIL steady. Refined common edible, £38; Egyptian, crude, £31 10s.; deodorised, £40. TURPENTINE quiet. American, spot, 60s. 6d.; January-April and May-June, 62s. per cwt.

HULL.—December 15.—LINSEED OIL.—Spot, to January-April, £30 7s. 6d.; May-August, £30 2s. 6d. COTTON OIL.—Bombay, crude, £30; Egyptian, crude, £30 10s.; edible, refined, £35; technical, £34 5s.; deodorised, £37. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., £38 10s. GROUNDNUT OIL. Crushed-extracted, £42 10s.; deodorised, £46 10s. SOYA OIL.—Extracted and crushed, £34 10s.; deodorised, £38. RAPE OIL.—Crude-extracted, £45; refined, £47 per ton. CASTOR OIL.—Pharmaceutical, 54s. 6d.; firsts, 49s. 6d.; second, 47s. 6d. per cwt., net cash terms, ex mill.

Nitrogen Products

Export.—As many of the coke ovens are at work again, the British production is on the increase. The normal coke oven production will not be attained for some months. Despite this increase British producers will have very small supplies for export, as the home season will commence shortly. Prices remain on the basis of £11 5s. per ton, f.o.b. U.K. port in single bags.

Home.—The only change to report in the home position is that a price to farmers has now been fixed for ordinary quality sulphate of ammonia, some of which is still produced at the smaller works. It was expected that the whole of the ordinary grade would be sold to fertiliser manufacturers. It appears that in some districts ordinary quality will be available for straight consumption, and this will be sold at :—December, £11 8s. per ton—basis 20%; January, £11 10s. per ton—basis 20%; February, £11 13s. per ton—basis 20%; March-May, £11 16s. per ton—basis 20%. Delivered in 4 ton lots to farmers' nearest station. In previous years the difference in price between neutral and ordinary quality was 23s. per ton, but as the supply of ordinary is now very small and some demand for it still remains, there is no doubt that the whole of this will be consumed at the lower difference now in operation.

Nitrate of Soda.—The nitrate position remains unchanged. As the consuming season comes nearer, merchants are beginning to purchase in order to provide for farmers' requirements. The increased buying now taking place will have small effect on the Nitrate Producers' statistical position.

Calcium Cyanamide

THE market is showing signs of increased activity as the results of this year's experience have become more widely known. In addition to the inquiry for direct application, mixing firms are showing an increased interest. Prices are unchanged at £9 10s. per ton, carriage paid in 4 ton lots to any railway station in Great Britain.

Reduced Borax Prices

PATENT PHOSPHATES AND MERCHANDISE, LTD., 6, Fennel Street, Manchester, advise us of an important reduction in the price of Polar Brand best English refined borax and boric acid, of £3 per ton.

THE CHILEAN NITRATE CRISIS has led the Chilean Government to take measures to meet the situation. One which met the immediate approval of the Government was that proposed by a well-known bank offering to advance £2,000,000 for the purpose of giving credit to small buyers to encourage the sale of nitrate in preference to the artificial product. In order to facilitate such operations, the Minister of Finance has sent to Congress a bill which authorises the executive to allow a State guarantee up to £200,000 in favour of banking institutions lending money to buyers.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, December 15, 1926.

BUSINESS in the heavy chemical market continues to show improvement, and there has been considerable inquiry during the past week both for home and export. There are no changes in prices of any importance to record.

Industrial Chemicals

ACETIC ACID.—98/100%, £55 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 to £38 per ton; 80% technical, £37 to £38 per ton, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In good demand and price unchanged at 7¼d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Unchanged at 1s. 3d. per lb., less 5% ex store, with demand poor. Quoted 1s. 2¾d. per lb., less 5% ex wharf, prompt shipment from the Continent.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—In moderate demand and price unchanged at about 3¾d. per lb., ex store, spot delivery. Quoted 3½d. per lb., c.i.f. U.K. ports, prompt shipment from the Continent.

ACID SULPHURIC, 144°.—£3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—In moderate demand and price unchanged at about 11¼d. per lb., less 5% ex store, spot delivery. Offered for prompt shipment at about 11⅛d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material on offer at about £6 per ton, ex store. Quoted £5 8s. 6d. per ton, c.i.f. U.K. ports. Prompt shipment from the Continent.

ALUM, POTASH.—Lump quality offered from the Continent at £8 per ton, c.i.f. U.K. ports. Crystal powder, £7 15s. per ton, c.i.f. U.K. ports. Lump material on spot quoted £9 2s. 6d. per ton, ex store. Crystal powder, £8 15s. per ton, ex store.

AMMONIA ANHYDROUS.—Imported material selling at about 11¼d. to 11½d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2¼d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £24 10s. per ton, ex station. Continental make on offer at about £21 per ton, c.i.f. U.K. ports. Fine white crystals of Continental manufacture quoted £18 10s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Spot material quoted £19 10s. per ton, ex store; offered for early delivery at £18 15s. per ton, ex wharf.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals offered from the Continent at about £8 2s. 6d. per ton, c.i.f. U.K. ports. Spot material now quoted £9 15s. per ton, ex store.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Spot material now quoted £9 per ton, ex stations. Contracts 20s. per ton less. Continental on offer at about £7 10s. per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton, carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works, or at £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—English material unchanged at about £23 5s. per ton, f.o.b. U.K. ports. Continental on offer at £22 10s. per ton, ex wharf.

FORMALDEHYDE, 40%.—Spot material on offer at £40 per ton, ex store. Quoted £38 per ton, c.i.f. U.K. ports, prompt shipment.

GLAUBER SALTS.—English material quoted £4 per ton, ex store or station. Continental on offer at about £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £36 15s. per ton, ex store.

LEAD, WHITE.—Quoted £37 5s. per ton, ex store.

LEAD, ACETATE.—White crystals quoted £44 5s. per ton, c.i.f. U.K. ports. Brown at £40 10s. per ton, c.i.f. U.K. ports. White crystals quoted £45 5s. per ton, ex store, spot delivery.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

POTASH CAUSTIC, 88/92%.—Syndicate price, £29 15s. per ton, c.i.f. U.K. ports, minimum 15 ton lots. Liquid 50° now quoted £14 per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store. 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered, quality offered from the Continent at £24 10s. per ton, c.i.f. U.K. ports. Crystals £2 per ton extra.

POTASSIUM NITRATE (SALTPETRE).—Quoted £22 per ton, c.i.f. U.K. ports. Prompt shipment from the Continent. Spot material about £24 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6¾d. per lb., ex store, spot delivery. On offer for early shipment at 6½d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Still in good demand. Spot material quoted 7¾d. per lb., ex store. On offer from the Continent at 7⅛d. per lb., ex wharf, prompt shipment.

SODA CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton. Broken, 60%, £16 12s. 6d. per ton. Powdered, 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less. Manufacturers advise varying reductions in different strengths for next year.

SODIUM ACETATE.—English material quoted £22 10s. per ton, ex store. Continental on offer at about £19 per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Prices for spot delivery unchanged at 3½d. per lb., delivered. Manufacturers advise a reduction of ¼d. per lb. as from January 1 next.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more; alkali, 59%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station, minimum 4 ton lots; pea crystals, photographic quality, £14 10s. per ton, ex store, spot delivery. Continental commercial crystals quoted £8 15s. per ton, ex store.

SODIUM NITRATE.—Ordinary quality quoted about £12 12s. 6d. per ton, ex store. Refined quality 5s. per ton extra.

SODIUM NITRITE, 100%.—£21 5s. per ton, ex store, spot delivery.

SODIUM PRUSSIATE (YELLOW).—Quoted 4½d. per lb., ex store, spot delivery. Still in good demand. Offered for prompt shipment from the Continent at 4⅜d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60/62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 3d. per ton. All delivered buyers' works U.K. Minimum 5 ton lots, with slight reduction for contracts; 60/62%, solid quality, offered from the Continent at about £8 15s. per ton, c.i.f. U.K. ports. Broken quality 15s. per ton more. Crystals, 30/32%, about £6 10s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £12 5s. per ton; roll, £11 per ton; rock, £11 per ton; floristella, £10 10s. per ton; ground American, £9 15s. per ton. Ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98/100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

DIMETHYLANILINE.—2s. per lb.; some inquiries.

N.W. ACID.—4s. 9d. per lb.; some inquiries.

PARANITRANILINE.—1s. 9d. per lb.; some inquiries.

METATOLUYLENEDIAMINE.—3s. 3d. per lb.; small inquiries.

CLEVES ACID.—2s. 3d. per lb.; some inquiries.

NARCOSAN, a substance obtained from soya beans and various seeds by Mr. A. S. Horovitz, an American bio-chemist, is said to be giving good results in the treatment of drug addicts.

Manchester Chemical Market

FROM OUR OWN CORRESPONDENT.

Manchester, December 16, 1926.

ALTHOUGH the tone of the chemical market in Manchester during the past week has been of a rather cheerful nature, trade itself remains restricted and shows little improvement over the volume of business done during the last month or two. The explanation is, probably, that no expansion will show itself until next month. At all events, there is only a quiet business stirring now and this is likely to continue until after the holidays. Current prices keep steady and show little alteration, although one or two reductions in next year's contract figures are announced.

Heavy Chemicals

Bleaching powder is in limited demand at £8 10s. per ton, with contract prices for 1927 deliveries in 4-ton lots 10s. per ton less than this. Caustic soda is still offering at from £15 2s. 6d. per ton for 60 per cent. material to £17 10s. per ton for 76 per cent. for deliveries over the remainder of the year, with next year's contract business at 10s. a ton less than this. There is very little business passing in glauber salts, which remain at about £3 15s. per ton, with saltcake also attracting limited attention at £3 5s. Prussiate of soda is firm at 4¼d. per lb., supplies still being rather short, although the demand at the moment is quiet. Hyposulphite of soda is rather slow, but values are steady at £15 10s. per ton for photographic material and £9 5s. to £9 10s. for commercial. There has been no alteration in the position of bicarbonate of soda, which keeps steady and in fair request at £10 10s. per ton. Nitrite of soda is maintained at £19 10s. per ton, although there is not much business being done in this just now. Chlorate of soda is in rather poor request and values are still easy at about 3d. per lb. Commercial sulphide of soda is being offered at £7 5s. to £7 10s. per ton and 60-65 per cent. concentrated solid at £9 15s., without attracting much attention. Bichromate of soda is firm and in moderate request at about 3¼d. per lb. Alkali meets with some inquiry at £6 15s. per ton. Phosphate of soda is slow but about unchanged on the week at £12 15s. per ton.

Permanganate of potash remains in limited request, with prices fairly at 6½d. to 6¾d. per lb. for B.P. quality and 6d. for commercial. Caustic potash is maintained at the increased price of round £30 per ton. Carbonate of potash is quiet but steady at £26 10s. per ton. Chlorate of potash moves off slowly, but values are unchanged at about 3½d. per lb. There is only a quiet demand in the case of bichromate of potash but, with supplies still rather scarce, quotations are fully maintained at about 4⅜d. per lb. Yellow prussiate of potash is firm at round 7¼d. per lb., and here again offers are not too plentiful.

Sulphate of copper is steady at £23 10s. to £24 per ton, f.o.b., a fair inquiry on export account coming to hand. Up to the present there is little sign of easiness in the case of arsenic, from £16 10s. to £17 per ton at the mines being quoted for white powdered, Cornish makes. Acetate of lead is in limited request, but prices are steadier at round £45 per ton for white and £41 for brown material. For nitrate of lead round £40 per ton is now being asked, but the buying movement is restricted at the moment. The acetates of lime remain firm and about unchanged on the week with brown quoted at £9 per ton and white at about £17 5s.

Acids and Tar Products

Oxalic acid keeps steady and meets with a quiet demand at 3⅝d. per lb. Citric acid continues in slow request with prices on the easy side at 1s. 3d. to 1s. 3¼d. per lb. Tartaric acid is about maintained at 11¼d. to 11½d. per lb., but there is not much doing at the moment. Acetic acid is quiet but steady at £37 to £37 10s. per ton for 80 per cent. commercial and about £66 for glacial.

Among the by-products, pitch is largely nominal in the absence of supplies and in view of the uncertain outlook at £7 to £7 10s. per ton f.o.b. Creosote oil is scarce and steady at round 8d. per gallon. Solvent naphtha is in quiet demand at 1s. 10d. per gallon, with carbolic acid crystals firm at round 7d. per lb.

Dispute Over Insecticide Patent

ON Monday in the Court of Appeal the Master of the Rolls and Lords Justice Atkin and Lawrence had before them an appeal by the Comptroller of Patents from a judgment of Mr. Justice Clauson in the action of the Rex Co. and Rex Research Corporation *v.* Muirhead. The plaintiffs in the latter action applied to Mr. Justice Clauson for an injunction to restrain the Comptroller from accepting a complete specification in respect of Mr. Muirhead's application as regards an insecticide, as the disclosure of the composition of the latter would be a breach of trust, and an injunction was granted against the Comptroller and Mr. Muirhead. The Solicitor-General, who appeared in the appeal for the Comptroller, said that the latter did not object to the injunction going against Mr. Muirhead, but he did object to the injunction as against himself, and his power, so to speak, taken out of his hands and given to another tribunal. After a long discussion it was arranged that the injunction should be discharged and the action discontinued as against the Comptroller, but the injunction in a slightly modified form was continued as against Mr. Muirhead, who was now in England and had entered an appearance to the action.

Sir Alfred Mond on Industrial Combination

SIR ALFRED MOND, speaking on Tuesday at a luncheon of the American Chamber of Commerce in London, said that to-day the industries of one nation had to negotiate with those of another nation. He had no doubt that the line which they had deliberately taken after careful thought in the merger of chemical industries would have to be followed. He was convinced that it could be followed with advantage if three leading principles were observed. Firstly, capitalisation must represent real assets and not promoters' profits; secondly, those who formed the management and direction of the concern must be people animated with the same ideas of how the business was to be conducted, people who had a sincere desire to work harmoniously together and who were ready to sink their individual interests in the concern; thirdly, they must succeed in creating machinery to maintain contact between those at the head and those in the subordinate positions, right down to the common workman.

I.G. and Production of Oil from Coal

AT a recent meeting of the board of the I.G. it was stated that the trust had discovered, patented, and developed a coal distillation process of their own, and they were convinced that, unlike the processes hitherto known, it would pay. Their process was an independent development on the basis of knowledge obtained by them. As, however, it rested to some extent on the fundamental work of Dr. Bergius, they had also secured the Bergius patent for lignite in Germany exclusively, and had made possible the use of hard coal by acquiring a considerable interest in the Kobergin A.G. Abroad, the I.G. had acquired a considerable interest in the International Bergin Company of The Hague, which owned the Bergius patents outside Germany. The recent journey of several directors to the United States had been undertaken with a view to arranging co-operation with the American oil industry, and this object had been achieved.

A New Automatic Water Valve

MANLOVE, Alliott and Co., Ltd., laundry engineers, Nottingham, have issued a descriptive calendar of their "Multi Jet" washer fitted with "Yates Automatic Valve," the latter being designed so that it automatically controls the supply of hot and cold water and so prevents waste or overflowing. This should prove useful in the wash-house and should increase the efficiency of the washing machine. All that is necessary is to pull down the locking lever, set the latch on the gauge bar to the desired water level in the washer, and the adjusting levers for the required amount of hot and cold water. It will then automatically close the valves when the float rises to the water level. The makers claim that it saves water, time, material and labour, and can be fitted to various types of machines and tanks, etc.

Company News

BOOTS PURE DRUG CO.—An interim dividend of 6 per cent., less tax, has been declared on the ordinary shares for the past quarter, payable on January 1.

COURTAULDS, LTD.—A dividend on the 5 per cent. cumulative preference shares will be paid on January 1 to shareholders on the books at the close of business on December 9.

TARMAC, LTD.—In view of the unsatisfactory trading conditions resulting from the coal stoppage, the directors have decided that the question of the payment of the dividend on the preference shares for the half-year ending December 31 be deferred for further consideration until the completion of the company's accounts for the year ending December 31.

SULPHIDE CORPORATION, LTD.—After providing £85,588 to cover cost of water pouring and reopening operations at the Central Mine due to the recent fire, a net profit of £192,034 is reported for the year ended June 30 last, against £56,697 for 1924–25 after charging £32,526 for fire expenses and reducing capital assets by £81,428. The dividend on both the preference and the ordinary shares is 10 per cent., against 7½ per cent. on the preference only for the preceding year; £60,000 is placed to reserve against contingencies, against £5,600, and there remains to be carried forward £27,034, increasing the accumulated profit, used in the business, to £481,217.

IDRIS AND CO.—The report for the year ended October 31, 1926, states that, after charging all depreciations, the profit is £17,262, as compared with £18,286 for 1925. To the profit is added the balance brought forward of £3,977, making a total of £21,240. After deducting debenture interest, £2,400, dividend on A preference, 6 per cent., £6,600; on B preference, 7 per cent., £700; on A ordinary, 10 per cent., £5,000; on B ordinary, 10 per cent., £1,800; and on founders' shares, 5 per cent., £900, there remains to carry forward £3,840. The annual meeting will be held at the Midland Grand Hotel, St. Pancras Station, London, on December 21, at 11 a.m.

CASSEL CYANIDE CO.—At the annual meeting of the shareholders in Glasgow on Wednesday, December 8, Sir Edward Brotherton, who presided, said that, having regard to the industrial conditions which had prevailed in this country since the month of May, they would, he felt sure, agree that the result of the year's trading was not unsatisfactory. The coal stoppage found them fairly well prepared, not only with raw material, but with the finished product. The turnover was well maintained, and all demands upon them had been met. Manufacturing operations, however, had not been carried through without difficulty, production costs having advanced with the increased cost of fuel, and this factor might be expected to make itself felt to a greater extent in the accounts for the current year. Answering a shareholder, the chairman said that Brunner Mond had acquired Castner-Kellner, and a close working agreement existed between Cassel Cyanide and Brunner Mond, particularly through the Castner-Kellner Co.

Sulphur Producers' Voluntary Liquidation

A MEETING of the creditors of Norris Brothers, Ltd., of Moorgate Station Chambers, London, sulphur producers and distributors, was held on Monday. Mr. R. H. Dutchman, the liquidator in the voluntary liquidation of the company, said that the liabilities to creditors amounted to something like £2,000. Of that amount, however, about 90 per cent. was in respect of breach of contract, etc. The company was formed in 1918, and the number of fully-paid-up shares issued amounted to £4,500, and there were 500 shares issued for a consideration other than cash. The whole of the £4,500 was put up by Mr. Norris. It was resolved that the matter should be left in the hands of Mr. Dutchman as liquidator. Among the creditors were Price, Stutfield and Co., Ltd. (£23), J. C. Mount and Co. (£550), and the Vinolia Co., Ltd., (£11).

MR. H. J. CANNON is to be head of the chemical department of the headquarters of cancer research in Yorkshire, which will be situated in Leeds. Mr. Cannon has been associated with Professor J. C. Drummond in work on vitamins.

THE BRITISH CAST IRON RESEARCH ASSOCIATION held its annual meeting in London on Wednesday. Sir John Dewrance was re-elected president.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to January 8, 1927.

"SEXTOL."

474,083.—Solvents, being chemical for use in manufactures. Class 1. Howards and Sons, Ltd., Uphall Works, Uphall Road, Ilford, Essex, chemical manufacturers. October 21, 1926. (To be Associated. Sect. 24.)

"SEXTATE."

474,084. For particulars see No. 474,083.

"SEXTONE."

474,085. For particulars see No. 474,083.

"OTTER."

474,094. For paints and varnishes. Class I. R. Davidson and Co., Ltd., 20, Tithebarn Street, Liverpool, oil and paint manufacturers. October 22, 1926.

"UNIVERSITY."

474,645. Chemical substances prepared for use in medicine and pharmacy. Class 3. August William Vesterling, 107, Castle Street, Battersea Park, London, S.W.11, manufacturer. November 6, 1926.

"BRITALINE."

473,404. Class 4. Raw or partly prepared vegetable, animal, and mineral substances used in manufactures, not included in other classes. British Tallow Corporation, Ltd., 11, Aldwych, London, W.C.2, manufacturers. September 28, 1926.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

PRECIPITATED CHALK AND PULVERISED CHINA CLAY.—H.M. Consul-General at Chicago reports that a local firm desire to receive quotations for car load lots of precipitated chalk and finely pulverised China Clay. United Kingdom producers of these commodities can obtain further particulars of the inquiry upon application to the Department of Overseas Trade. (Reference B.X. 3082.)

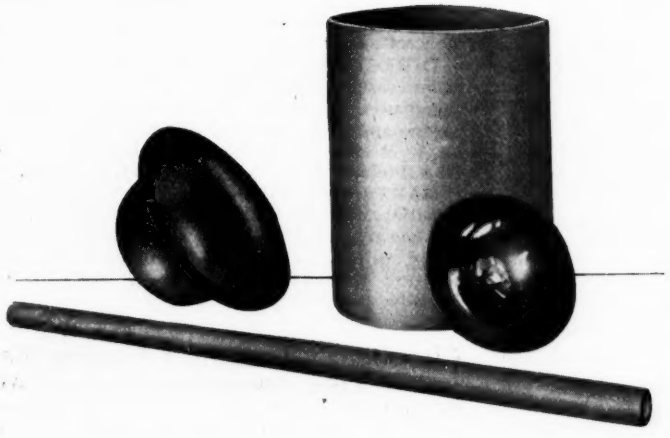
EBONITE, VULCANITE, AND RUBBER APPLIANCES.—His Majesty's Vice Consul at Strasbourg (Mr. J. K. V. Dible) reports that a local firm desires to receive quotations for ebonite, vulcanite and rubber surgical and medical appliances. United Kingdom firms desiring to offer British goods can obtain further particulars of this inquiry on application to the Department of Overseas Trade. (Reference B.X. 3,093.)

OIL SEEDS.—A firm in India desire to be put in touch with oil mills in the United Kingdom willing to work with India direct, and who require buying agents in India for purchasing oilseeds on their account. British firms interested should address their inquiries to the Indian Trade Commissioner, 42, Grosvenor Gardens, London, S.W.1, quoting reference No. 47006.

DRUG LINES AND SPECIALITIES.—A manufacturers' agent in St. John's, Newfoundland, desires to obtain the representation of British manufacturers (but not merchant houses). (Reference No. 676.)

RAW MATERIAL FOR THE PHARMACEUTICAL INDUSTRY.—A firm in Vienna desires to secure the representation on a commission basis of British manufacturers. (Reference No. 682.)

DISINFECTANTS, PERFUMES, ETC.—A travelling commission agent for Straits Settlements, etc., desires further non-competitive agencies for this district. (Reference No. 693.)



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FIRTH "STAYBRITE" SILVER STEEL

combines the qualities of resistance to atmospheric influence, moisture, sea water, many acids (including nitric), vinegar, and many organic agents with ease in manipulation.

It is supplied in the form of descaled sheets and strip, possessing a beautiful surface and colour, and taking a high degree of polish. It is intended to replace the class of material known as "Stainless Iron," over which it offers great advantages.

FIRTH "STAYBRITE," with a yield point of about 15 tons per sq. in. and an elongation of 55% to 70%, has exceptional ductility, combined with maximum corrosion resisting qualities.

It may be cold pressed to a degree far in advance of the so-called "Stainless Iron," and, moreover, presents no difficulties in manipulation, since it may be welded, brazed, soldered and riveted without trouble.

The whole Firth experience of the successful application of Stainless Steels to hundreds of problems similar to yours is at your service.

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Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

WOODBROOK DRUG CO., Vale Place, Wolverhampton, manufacturing chemists. (C.C., 18/12/26.) £16 10s. 7d. November 5.

London Gazette, &c.

Bankruptcy Information

GIBBS, Henry Albert, 9, John Street, Lozells, Birmingham, oil and chemical importer and refiner. First meeting, December 20, 11 a.m., Official Receiver's Office, 191, Corporation Street, Birmingham. Public examination, January 19, 1927, 2.30 p.m., Court House, Corporation Street, Birmingham.

Companies Winding Up Voluntarily

NORRIS AND CO., LTD. (C.W.U.V., 18/12/26.)

ROSSITER AND CO., LTD. (C.W.U.V., 18/12/26.) By special resolution, November 16, confirmed December 2. R. E. Ware, of Ware, Ward and Co., chartered accountants, Exeter, appointed liquidator.

WALKER HARDMAN, LTD. (C.W.U.V., 18/12/26.) S. V. Griffith, incorporated accountant, King's House, King Street West, Manchester, appointed liquidator, December 2.

Partnership Dissolved

DOUGLAS AND CO., manufacturing chemists, Croftamie, Dumbartonshire. Business sold by executrix of the late William Cumming to J. G. Calder, 16, Glasgow Road, Perth.

Receiverships

BELL (JOHN) AND CROYDEN, LTD. (R., 18/12/26.) D. H. Allan, of 4, Fenchurch Avenue, E.C., C.A., was appointed Receiver on December 7, 1926, under powers contained in instrument dated August 25, 1922.

CLAYTON GLUE WORKS, LTD. (R., 18/12/26.) R. T. Tiplady, of 10-12, Bowkers Row, Bolton, ceased to act as receiver for J. W. Wright, T. Y. Ritson, and J. Batten, three of the second debenture holders, on December 4, 1926.

MILES (C. F.) AND CO. (BIRMINGHAM), LTD. (R., 18/12/26.) T. H. Platts, of Union Street, Birmingham, was appointed receiver and manager on December 3, 1926, under powers contained in first mortgage debentures dated June 12, 1924.

New Companies Registered

CELLULOSE PRODUCTS (1926), LTD.—Registered December 13. Nom. capital, £20,000 in 18,500 10 per cent. preferred ordinary shares of £1 each and 30,000 deferred ordinary shares of 1s. each. The objects are to acquire the undertaking and all or any of the assets of Cellulose Products, Ltd. (incorporated September 8, 1925, and now in liquidation), and to carry on the business of chemical manufacturers, analytical, consulting and pharmaceutical chemists, druggists, distillers of essential and synthetic oils, drysalters, oil and colourmen, etc. A subscriber: P. Richards, 24, Coleman Street, London, E.C.2. Solicitors: Billinghurst, Wood and Pope, 7, Bucklersbury, London, E.C.4.

CHEMICAL MANUFACTURERS, LTD. Registered December 9. Nom. capital, £4,000 in £1 shares. To acquire the secret process and formula for stripping paint without the use of blow lamps invented and discovered by O. P. Swift. Directors: F. C. Dean, 3, Grove Terrace, Frizinghall, Bradford, O. P. Swift, C. G. Taylor, and T. W. White.

W. J. CRAVEN AND CO., LTD. Registered December 10. Nom. capital, £6,000 in £1 shares. To acquire the business of a manufacturing chemist now carried on by W. J. Craven at 48, Port Street, Evesham, Worcs., as W. J. Craven and Co., and to carry on the business of manufacturing chemists, inventors and manufacturers of manures, insecticides, fungicides, etc. Directors: W. J. Craven (managing director), Ashcroft, Port Street, Evesham, and R. V. Craven.

DIRECT PETROL, LTD. Registered December 8. Nom. capital, £6,000 in £1 shares. Wholesale and retail oil merchants, oil refiners, manufacturers, dealers in varnishes, tars, soaps, dyes, candles, acid compositions, etc. Directors: C. J. Meeson, "The Poplars," High Road, Ponders End, A. A. Pollard, P. Chiswell, J. Meeson, C. Tulley, and O. Cowell.

HARTS COLOURS, LTD., The Colour Works, Bent Lane, Bredbury, Ches. Registered December 8. Nom. capital, £20,000 in £1 shares. Colour manufacturers and merchants, dyers, printers, chemists, drysalters, bleachers, etc. Directors are J. Higginson (chairman), W. E. Houghton, J. M. Tiplady, J. A. Charlton, R. T. Tiplady, and C. J. L. A. Worrall.

Chemical Company's Income Tax Appeal

Claim Arising Out of Munitions Work

IN the Court of Session, Edinburgh, on Wednesday, December 8, the Lothian Chemical Company, Ltd., of Broughton Road, Edinburgh, appealed against an assessment to income tax on the sum of £1,940 made upon the company for the year ending April 5, 1923. In June, 1917, it was decided that the situation of the company's works in Broughton Road was too dangerous for a continuance of the manufacture there of T.N.T., and a few months later an arrangement was entered into between them and the Minister of Munitions for the conversion of the plant and works with the object of rendering them suitable for the manufacture of calcium nitrate. The work of conversion was commenced in November, 1917, and was carried out by the autumn of 1918. Following upon the Armistice, the Ministry of Munitions' contract with the company was determined towards the end of the year 1918 after only one week's output had been manufactured. The actual cost to the company of the work of conversion exceeded the sum of £15,000 payable and paid by the Ministry in terms of the contract by a sum agreed for the purposes of this case to be taken at £4,044. In October, 1924, the company raised an action against the Lord Advocate for recovery of the excess of the cost of the conversion of the works and plant over the sum received from the Ministry, and in February the action was settled, the company receiving a net sum of £1,879. The loss of £2,165, being the difference between the sum of £1,879 and the sum of £4,044, was claimed by the company as a deduction in computing the result of its working for the year ending March 31, 1921, and it was contended on their behalf that it was a trading loss and a bad debt. The Court, upholding the contention of the Crown, held that the sum was a loss not connected with or arising out of the company's trade, and that it was a loss of capital and inadmissible as a deduction for the purposes of income tax.